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Woodward-Clyde Consultants

INTERIM REPORT ON PHASE II OF THE SUBSURFACE INVESTIGATION AT TANKS 19T AND 20T AT THE C6 FACILITY

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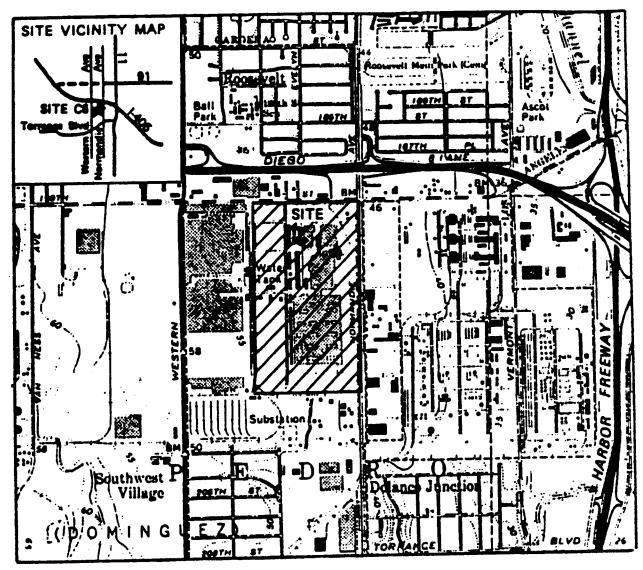
1.0 INTRODUCTION

The purpose of this report is to present the results of the Phase II subsurface investigation. This investigation was performed to evaluate the source of elevated concentrations of organic compounds in the soil and ground water near tanks 19T and 20T at Douglas Aircraft Company's C6 facility in Los Angeles, California. The facility location is shown on Figure 1.

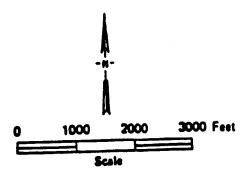
The results of Phase I of the investigation indicated the presence of petroleum hydrocarbons in the soil to a depth of 50 feet in the vicinity of tanks 19T and 20T. In addition, 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and benzene had been detected in water samples collected from observation well WCC-1, which was installed at a location thought to be downgradient of the tanks. The locations of borings and wells installed during the Phase I work are shown on Figure 2.

2.0 OBJECTIVE

The objective of this phase of the investigation was to evaluate the source of organic compounds in the soil and ground water near tanks 19T and 20T.





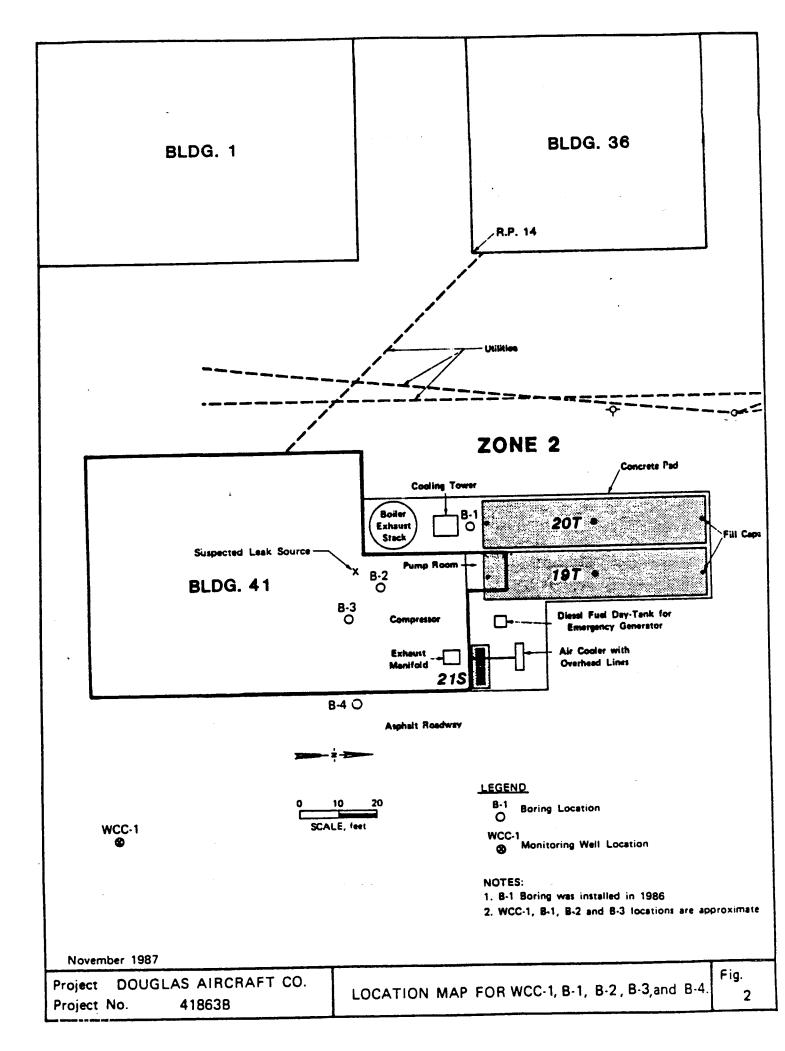


Project: DOUGLAS AIRCRAFT CO.

Project No. 41863A

C6 FACILITY LOCATION MAP

Fig.



3.0 DESCRIPTION OF THE FIELD PROGRAM

Phase II of the investigation was performed in the following manner. Three additional observation wells (WCC-2, WCC-3 and WCC-4) were installed at the locations shown on Figure 3. Details on the field program used during the installation of the wells are presented in Appendix A.

Well WCC-1 is located approximately 40 feet due east of Building 41, and was installed in March 1987. Well WCC-1 is downgradient with respect to the location of tank clusters 19T, 20T, and 15T to 18T (see Figure 3).

Well WCC-2, is situated between buildings 61 and 34. This well is considered to be the upgradient ground water observation well relative to the two tank clusters, and is approximately 400 feet northwest of tank cluster 15T to 18T.

Well WCC-3 is located at the northeast corner of Building 1, between the diesel tank cluster 19T, 20T, and the solvent tank cluster 15T to 18T. This well is also situated downgradient of solvent tanks 15T and 18T.

Well WCC-4 is approximately 100 feet southeast of Building 41, and is downgradient of tank clusters 19T, 20T, and 15T to 18T.

Boring B-4 was installed on May 26, 1987 by A & R Drilling Company (see Figure 2). This boring was installed to allow further evaluation of the vertical extent of petroleum hydrocarbons in the subsurface near tanks 19T and 20T. Borings B-1, B-2, and B-3 were installed during an earlier

evaluate whether organic compounds are present in the ground water at the site perimeter. A discussion on the optimum location for Well WCC-5 is presented in Section 6.0.

Ground surface elevations of observation wells WCC-1, -2, -3, and -4 were surveyed on 3 November 1987 by Rattray and Associates, Inc. of Santa Ana, California. The survey provided the ground water elevation data required to evaluate the direction of the ground water gradient.

4.0 RESULTS

4.1 Ground Water Elevations

Ground water elevation data collected on 6 November 1987 indicated that in the area defined by the four wells, the elevation of ground water from Mean Sea Level (MSL) varies from -21.41 to -21.94 feet. These elevations indicate that the water table is over 21 feet below MSL. The water levels from the deeper aquifers, are also below MSL. Water level information from 1983 indicates that the water levels in these deeper aquifers are at approximately -60 feet MSL (Los Angeles Flood Control District).

The low ground water levels found in the deep aquifers can be attributed to the reduced natural ground water recharge caused by urbanization of the Los Angeles Basin and the heavy use of ground water. Channelizing the Los Angeles and San Gabriel rivers also has significantly reduced recharge to the ground water system. The reduced recharge and heavy ground water extraction produce a ground water overdraft and a subsequent lowering of the water table. The ground water

phase of this investigation. Analytical data obtained from soil samples from these borings indicated that petroleum hydrocarbons were present to a depth of approximately 50 feet. The purpose of Boring B-4 was to evaluate how far below this 50-foot depth the hydrocarbons had penetrated. Boring B-4 was installed approximately 30 feet away from the suspected source of the release, and was slant drilled at an angle of 26 degrees from vertical, outside of the building. This boring had to be installed outside the building, because space restrictions prevented use of a large drill rig inside the building. The boring was terminated at a vertical depth of 54 feet.

Well logs from observation wells WCC-1, -2, -3, and -4 and Boring Logs for B-1, -2, -3, and -4 are presented in Appendix B.

On 30 October 1987, wells WCC-2, -3, and -4 were developed by Beylick Drilling Company of La Habra, California. The observation wells were developed by a surge block and sand bailer method, and pumped with a submersible pump until the extracted water was free of visible suspended material. Water samples were collected for chemical analysis for volatile organics (EPA 8240) and petroleum hydrocarbons (EPA 8015). The well development and water sampling methods used are discussed in Appendix A.

An additional observation well, WCC-5 will be located and installed within two weeks based on the estimated direction of the ground water gradient provided in this report. Well WCC-5 will be located along the eastern property line to

levels in the semi-perched aquifer beneath the facility may be influenced by the same factors as the deeper aquifers in the area.

4.2 Ground Water Gradient

The ground water gradient calculated from ground water elevations taken 6 November 1987 indicates a gradient sloping from the northwest to the southeast. Direction of ground water flow is illustrated on Figure 3. The ground water gradient was calculated through the use of gradient vectors between wells WCC-1, -2, -3, and -4. The ground water gradient illustrated in Figure 3 is based on data from wells WCC-1, -2, -3, and -4, and may not reflect ground water gradients at other areas at the C6 facility.

4.3 Well WCC-5 Location

The southeast gradient of ground water (discussed in Section 4.2) allows observation Well WCC-5 to be located along the property line, downgradient of the tank clusters. The proposed location of WCC-5 is shown on Figure 3. This observation well will be installed, developed, and sampled in the same manner as wells WCC-1, -2, -3, and -4. Water analysis results from Well WCC-5 will be used to assess whether organic compounds are present in the ground water at the site boundary.

4.4 Analytical Results of Wells WCC-1, -2, -3, and -4

Water samples were collected from observation wells WCC-1, WCC-2, -3, and -4 on 15 April and 2 November 1987. The samples were analyzed for volatile organic compounds (EPA 8240) and petroleum hydrocarbons (EPA 8015) by West Coast

Analytical Service, Inc. in Santa Fe Springs, California. Analytical results for the ground water samples are summarized in Table 1.

These analytical results show that the highest concentration of organic compounds was found in the sample collected from Well WCC-3, immediately downgradient of the tank cluster 15T to 18T. The concentration decreases as the downgradient distance from this area increases. The lower readings obtained from WCC-4 as compared to WCC-1 suggest that WCC-4 is closer to the edge of the plume than WCC-1. Well WCC-2, the upgradient well, has very low concentrations of 1,1-DCE, 1,1,1-TCA and TCE. Petroleum hydrocarbons were not detected in the water samples when analyzed by Method 8015. These results indicate that the source of the organic compounds in the ground water was not the release from tanks 19T, 20T.

Soil samples were collected at depths of approximately 45, 55, 65, 75, and 80 feet from all three well locations for Organic Vapor Analyzer (OVA) field headspace measurements and possible laboratory analysis. Refer to Appendix A for sampling methodology. Elevated OVA headspace readings and chemical odors were noted during the installation of Well WCC-3. OVA measurements were recorded on the Boring Logs presented in Appendix B. The presence of odors and elevated OVA readings were not observed at wells WCC-1, WCC-2, and The 55 and 65 foot depth soil samples from Well WCC-3 were analyzed for the presence of volatile organics (EPA 8240) and petroleum hydrocarbons (EPA 8015). 1,1-dichloroethane (methylene chloride), trations of 1,1-dichloroethene (1,1-DCE), 4-methyl-2-pentanone (MIBK), 1,1,1-trichloroethane (1,1,1-TCA), and toluene were found in

TABLE 1 GROUND WATER ANALYTICAL RESULTS Concentrations (ug/i)

COMPOUNDS	WCC-1 3/27/87	MCC-1* 4/13/87	UCC-1 11/12/87	WCC-2 11/2/87	WCC-2 11/12/87	WCC-3 11/2/87	WCC-3 11/12/87	NCC-4 11/2/87	HCC-4 11/12/87
	2,800	3,700/2,500	3,000	5	2	38,000	88,000	360	1,200
1,1-Dichloroethene (1,1-DCE)		/	23	••	••		1,000		••
1,1-Dichloroethane (1,1-DCA) 1,1,1-Trichloroethane (1,1,1-TCA)	300	260/120	160	5		110,000	54,000	14	35
Trichtoroethene (TCE)	4,600	5,500/3,600	5,200	14	4	10,000	11,000	700	690
4-Methyl-2-pentanone (MIBK)	••	/		••		54,000	70,000		
trans-1,2-dichloroethene (trans-1,2-DCE)	••	/	75	••			1,000	2	••
Chloroform	••	/	39	••	••			2	••
Toluene	••	/	••	6	1	80,000	140,000	••	
Benzene	85	110/	160	•			4 000		10
Detection level (ug/l)	50	50/50	20	1	1	1,000	1,000	'	

Duplicate sample also analyzed
 Not detected

the soil samples ranging from 8 to 590 ug/kg (ppb). Petroleum hydrocarbons were not found in the soil samples analyzed.

As a part of the underground tank management program at the C6 facility, soil borings were installed next to tanks and sumps, to identify past or current leakage of chemicals from these storage units. Borings were installed on 24 August 1987 adjacent to tanks 15T and 17T. Boring Logs for tanks 15T and 17T are presented in Appendix B. Analytical results obtained from soil samples collected from these borings are summarized in Table 2.

The results indicate the presence of organic compounds in the soil next to the tanks. Soil samples from the boring next to Tank 15T contained a variety of compounds, including some of those found in the ground water (1,1,1-TCA, MIBK, TCE, and toluene). Samples from the boring next to Tank 17T contained only MIBK from the variety of compounds found in the ground water.

Laboratory analytical results for water and soil samples, and copies of the chain-of-custody forms are presented in Appendix C.

4.5 Depth of Penetration of Petroleum Hydrocarbons

Boring B-4 was installed on May 26, 1987, and was terminated at a vertical depth of approximately 54 feet (slant depth of 60.5 feet, see Figure 2). Analysis of samples collected from the boring showed that the concentration of petroleum hydrocarbons decreased from 16,000 mg/kg to below detection between a depth of 50 and 54 feet. Table 3 summarizes the

TABLE 2

ANALYTICAL RESULTS FROM SOIL BORINGS 15TB AND 17TB

Concentration (mg/kg)

Compound	15T (20 feet)	17T (30 feet)
2-Butanone (MEK)	1,800	810
1,1,1-TCA	38	
TCE	94	
Toluene	6,300	
Ethylbenzene	180	
Total xylenes	1,300	
4-methyl-2-pentanone (MIBK)		840

⁻⁻ Not detected

TABLE 3

ANALYTICAL RESULTS FROM BORING B-4

Sample Depth (ft)	<u>Petroleum Hydrocarbons</u> (mg/kg) ppm
13	ND
18	15,000
22	44,000
27	8,200
31	28,000
36	6,000
40	1,500
44	
49	16,000
54	ND
Detection Limit	10

⁻⁻ Not analyzed

analytical data. Data from this boring indicated that the petroleum hydrocarbons have penetrated to a depth of approximately 50 feet.

5.0 CONCLUSIONS

Observation wells WCC-2, -3, and -4 were installed to depths of approximately 90 to 91 feet at the C6 Torrance facility. Soil borings B1, B2, B3, and B4 were installed to depths of 31 to 54 feet, adjacent to tanks 19T and 20T. Data obtained from these wells and borings indicate the following:

- The ground water gradient in the area under investigation slopes from the northwest to southeast (see Figure 3).
- 2. During installation of Well WCC-3, elevated OVA headspace readings and chemical odors were observed at depths from 55 to 90 feet. Low concentrations of organic compounds were detected in two soil samples analyzed from this boring. These low concentrations indicate that the compounds are probably present in the soil at this location as a result of diffusion of the compounds from the source(s) in the soil and/or ground water as opposed to a direct release.
- 3. Analytical results of water samples from wells WCC-1, -2, -3, and -4 do not indicate the presence of petroleum hydrocarbons. However, volatile organic compounds were found in the water samples. The distribution of concentrations seems to indicate a source of organic compounds originating near the tank cluster 15T through 18T. These tanks and associated piping tested tight during the tank testing program in 1986.
- 4. Ground water elevations from the shallow semi-perched aquifer ranged from -21.41 to -21.94 feet Mean Sea Level. The negative ground water elevations indicate that the ground water is below sea level.

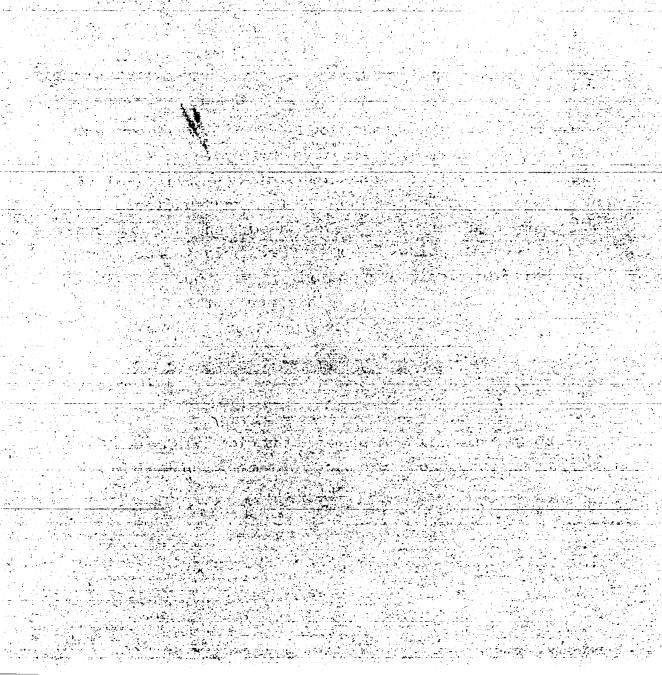
5. Data obtained from observation wells and Boring B-4 indicate that the piping at tanks 19T and 20T is not the source of the organic compounds in the ground water. The area near tank cluster 15T through 18T appears to be a more likely source. In addition, the petroleum hydrocarbons do not appear to have penetrated greater than 50 feet below the surface, and are confined to the area inside Building 41.

6.0 RECOMMENDATIONS

Ground water elevations indicate a gradient to the southeast. Observation Well WCC-5 will be installed within two weeks downgradient along the eastern property line, as shown in Figure 3. This location would detect organic compounds if present in the ground water at the site perimeter. The location was selected based on the ground water gradient established from observation wells WCC-1, -2, -3, and -4, and assumes that hydrogeologic conditions are not significantly different in the proposed location of Well WCC-5.

Between one and three additional borings should be installed near tank cluster 15T to 18T, to evaluate the vertical and lateral distribution of the organic chemicals found in the soil at this location. The results obtained from these borings will help in evaluating whether these tanks are a source of the solvents found in the ground water. The location of the proposed borings will be selected following a review of facility operations at the tank cluster.

Remediation options for cleanup of the fuel oil under Building 41 are currently being evaluated. Options being evaluated include the No Action option and the use of a Vapor Extraction System (VES).



APPENDIX A FIELD PROCEDURES AND METHODOLOGY

(ABC/DAPPA)

APPENDIX A FIELD PROCEDURES AND METHODOLOGY

A.1 GENERAL INFORMATION

Drilling was performed by A & R Drilling, Inc. of Carson, California. Drilling began on 26 October 1987 and was completed on 30 October 1987. Monitoring wells were drilled using a CME 75 with 7-inch outside diameter (O.D.) and 10-inch O.D. hollow stem augers.

A.1.1 Monitoring Well Installation

Monitoring wells WCC-2, -3, and -4 were constructed of 4-inch, Schedule 40 PVC and set to a depth of about 90 to 91 feet. The monitoring wells were installed by drilling a 90-foot deep pilot hole with the 7-inch O.D. hollow stem augers used for soil sampling. Upon removal of the 7-inch hollow stem auger from the hole, 10-inch O.D. hollow stem augers were used to ream the pilot hole to a 10-inch diameter. A wooden plug was placed in the lead cutting auger to prevent cuttings and water from entering the inside of the auger. Municipal water was added to the inside of augers as drilling progressed through the water table to offset the hydrostatic pressure of the fine grained flowing sands outside the augers. Two attempts were made to install Well WCC-3 without the use of water, but the bottom 3 to 5 feet of the auger "sanded-in" immediately after knocking out the wooden plug. The "sanding-in" of the augers prevented the wells from being properly constructed. Water had to be used to ensure proper well construction of WCC-2, -3, and -4. The amounts of city water used at each well was noted on the well log forms and samples of city water were collected for possible laboratory analysis.

A.1.2 Well Construction

The monitoring wells were constructed of 4-inch O.D. Schedule 40 PVC flush-threaded blank pipe, and screened with .010-inch slot. Adhesives were not used. Wells were installed with 70 feet of blank casing and 20 feet of screen. The well screen was filter packed using a 1-1/4 inch diameter tremie pipe, to reduce the possibility of sand bridging inside the augers. A filter pack material of Monterey #0/30 sand was selected, based on a field sieve analysis. Filter pack analysis is discussed in Section A.4. The filter pack was placed from the well bottom to about 5 feet above the top of the well screen from 65 to 90 feet.

A five-foot thick bentonite pellet plug was placed above the filter pack, at depths from about 60 to 65 feet, to prevent movement of fluids through the annular space. In addition, bentonite grout was placed at depths from approximately 8 to 60 feet below ground surface. A concrete plug was placed from approximately 8 feet to the surface, to prevent seepage of surface fluids into the well. The top of the well casings were completed 3 to 6 inches below grade and protected with a steel traffic-rated Christy box.

Appendix B presents the Boring Logs and graphic well construction details.

A.1.3 Drilling Residuals

Drill cuttings from each boring were placed in DOT Class 17H 55-gallon drums, and the contents of the drums were labeled using an identification label and permanent ink marker. The drums were sealed and left adjacent to the boring locations. Douglas Aircraft was advised of the locations and contents of the drums, and the need for proper management of the drill cuttings.

A.2 SOIL SAMPLING

Subsurface soil samples were collected at approximately 45, 55, 65, 75, and 80 feet below ground surface. Soil samples were collected for Organic Vapor Analyzer (OVA) headspace measurements, and for laboratory analyses. Soil samples were collected using a California modified sampler. The California modified sampler holds four brass tubes, and is 18 inches in length. Soil sample depths and OVA headspace measurements are shown on the Boring Logs in Appendix B.

A.2.1 OVA Headspace Measurements

Field OVA headspace measurements were taken from one of the soil samples collected at each sampling depth. This procedure was conducted by extruding the contents of one brass tube into a one pint glass jar. The jar's lid has a 1/4-inch diameter hole, which was sealed with duct tape. Approximately 10 minutes was allowed for organic vapors from the soil to reach equilibrium inside the jar. An OVA probe was then inserted through the hole in the jar, and the vapor concentration was measured (in ppm).

A.2.2 Soil Sample Preparation

One to two tubes from the soil sampler were prepared for laboratory analysis. The ends of the tubes were covered with aluminum foil, plastic end caps, and sealed with electrical tape. Soil samples were labeled with the following information:

- · Project number
- · Project name
- · Boring number
- · Sample number
- · Soil depth
- Date
- · Person collecting sample

The soil samples were then sealed in Ziploc plastic bags and placed on ice in an ice chest. All soil samples were delivered to West Coast Analytical Service, Inc. in Santa Fe Springs for analysis. Chain-of-custody procedures, includidentification labels and sample use of ing the used for tracking the chain-of-custody forms, were Copies of the collection and shipment of soil samples. chain-of-custody forms are presented in Appendix C.

A.3 FIELD OBSERVATIONS

Observations made by Woodward-Clyde Consultants personnel during the drilling and sampling operations were recorded on Boring Logs, as presented in Appendix B. These observations related to visual soil classifications, geologic and

stratigraphic comments, observation well construction details, sampling efforts, OVA measurements, and other pertinent information.

A.4 FILTER PACK ANALYSIS

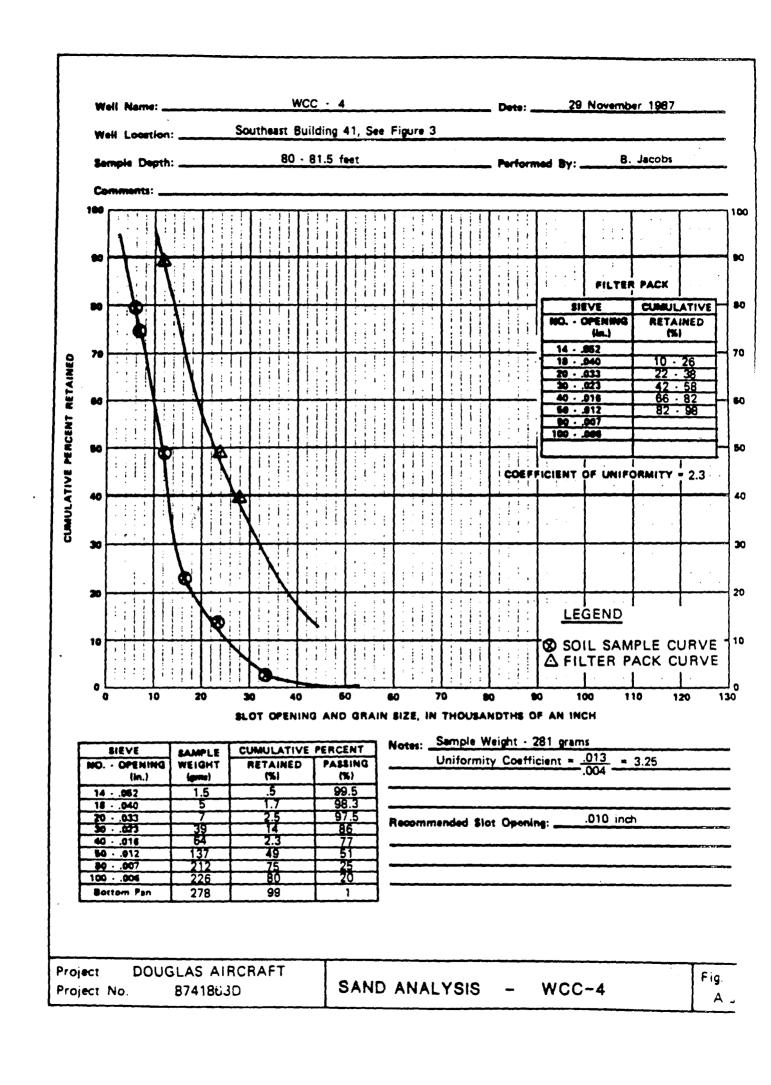
Selection of the proper filter pack material and well screen slot size is essential in collecting a sediment-free or low sediment content water sample. In monitoring wells WCC-2, -3, and -4 soil samples were collected from 75 or 80 feet below grade for sieve analysis. Filter pack design calculations were made based on the grain size distribution obtained from these soil samples.

Soil analyses were conducted in the field by collecting a soil sample from below the water table with a California modified sampler. The soil sample was heated with a portable propane stove to evaporate all water from the soil. When the sample was dried, it was weighed on a scale to the nearest gram. The soil sample was then poured into the top of eight sieves and shaken for approximately 5 minutes. The sieve sizes used in the analysis are shown in Figure A-1. The cumulative percent of the soil sample retained in each sieve was weighed and plotted on a sand analysis curve. It is the sand analysis curve that graphically characterizes the grain size distribution of the soil. Sand analysis curves for wells WCC-2, -3, and -4 are illustrated in Figures A-1, A-2, and A-3, respectively.

Calculating the filter pack size was done by multiplying the 50 percent retained size of the formation sample by 2 (Johnson 1986). This value was plotted on the sand analysis

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curve. Through this point on the filter pack curve, a smooth curve was drawn representing material with a uniformity coefficient of 2 to 3. The uniformity coefficient was calculated by dividing the 40 percent retained value by the 90 percent value, as shown in the equation below.

Uniformity Coefficient (U.C.) =
$$\frac{U.C.40}{U.C.90}$$

This filter pack curve defined the ideal filter pack required to prevent the entrance of fine silts, sands and clays into the monitoring wells. A ready made filter pack material was then selected that best matched the calculated filter pack curve, since custom made filter pack materials were not readily available. The sand analysis curves for wells WCC-2, -3, and -4 were similar and the soils were classified as fine-grained sands. The filter pack selected for the three monitoring wells was a Monterey #0/30 sand. The sand analysis curve for Monterey #0/30 is shown on Figure A-4.

A.5 WELL DEVELOPMENT AND WATER SAMPLING

Monitoring wells WCC-2, -3, and -4 were developed on 30 October 1987 by Beylick Drilling Company of La Habra, California. The wells were developed by a sand bailer and surge block method for 45 to 60 minutes and then pumped with a submersible pump. Wells WCC-3 and WCC-4 had 165 gallons of water removed during development. Well WCC-2 had 225 gallons removed during development. Table A-1 presents the development times and the ground water volumes removed.

We	il Location	:														
Sor	nple Depth	Filter Pac	- Massaci	alar	l in M	CC 1					, Perfs	orsthe	d By:	8.	Jacobs	
Co.	mments:	FILES FE	X Materi	ai Usec	in w	<u> </u>	,3, 4	4								
	1															
															PACK	
80													NO. -	EVE OPENING (in.)	CUMUI RETA (1)	INED
70										i		T	14 · 18 · 20 ·	.040 .033	(B
••													40 · 50 · 90 · 100 ·	.012 .007	91 91 99	
90											CO			OF UNIF	PRMITY	1
40										1						
30																
20													· .			
10													:			-
٥		20	20	40	•	0	60	1	70	•	ю	90	•	100 1	10	120
			SLOT O	PENIN	G AND	GRAIF	1 5 1Z	E, IN	THO	AZUC	NDTH	OF	AN IN	ICH		
	BIEVE - OPENING (in.)	SAMPLE WEIGHT (gree)	CUMUL RETA (%	INED	PASI		Not	un	iforr	nity	Coeffi	cien	t = .C	020 -	1.54	
18	062 040 033		 													
28	· .623 · .016						H.00		ende	d 810	ot Ope	und	:			
80	012 007 006					\exists								 		
Bot	tom Pan				<u> </u>											
`																

TABLE A-1
WELL DEVELOPMENT SUMMARY

Well No.	Sand Bailer and Surge Block Time (min)	Sand Bailer Volume Removed (gal)	Pumping Time (min)	Pumping Volume Removed (gal)	Total Volume Removed (gal)	Comments
MCC-2	60	80	35	145	225	Water clear after pumping 90 gallons
ucc-3	45	15	40	150	165	Water clear after pumping 95 gallons
WCC-4	45	40	35	125	165	Water clear after pumping 75 gallons

The last 50 to 55 gallons removed from the three monitoring wells was observed to be sediment free.

Water removed from the wells during development was contained and sealed in DOT Class 17E 55-gallon drums adjacent to the wells. The drums were labeled for contents, date, and well number.

Observation wells WCC-2, 3, and 4 were sampled on 2 November 1987. Each observation well had a minimum of three well casing volumes removed before a ground water sample was collected. Electrical Conductivity (EC) and temperature was recorded from each five gallons of ground water removed from the well. Stabilized EC and temperature values indicated that ground water from the aquifer formation was being extracted from the well. Table A-2 presents EC, temperature, and ground water volume data recorded during water sampling. The water removed from the wells is being stored on-site prior to disposal.

Monitoring wells were bailed with a PVC 3-1/2 inch PVC bailer. This bailer was washed with Liquinox detergent and rinsed with deionized water between usage in each well. The 3-1/2 inch diameter PVC bailer was only used for well volume removal and was not used for water sampling. After a minimum of three well volumes had been removed, and EC and temperature stabilized, a water sample was collected using a clean, 2-inch diameter Teflon bailer. Each well was sampled with a different 2-inch bailer to minimize the potential for cross-contamination.

TABLE A-2
WATER SAMPLING ELECTRICAL CONDUCTIVITY AND TEMPERATURE DATA

Well No.	Sample Interval (gal)	Electrical Conductivity EC - umhos	Temperature C'
WCC-2	0-5	750	22.5
	5-10	1,000	22.5
	10-15	1,000	22.5
	15-20	1,000	22.5
	20-25	1,000	22.5
	25-30	1,000	22.5
	30-35	1,000	22.5
WCC-3	0-5	2,250	23.0
	5-10	2,100	23.0
	10-15	1,950	22.5
	15-20	2,000	22.5
	20-25	2,000	22.5
	25-30	1,900	22.5
	30-35	1,800	22.5
WCC-4	.* 0 − 5	1,000	25.0
	5-10	1,050	22.5
	10-15	1,050	22.5
	15-20	1,050	22.5
	20-25	1,050	22.5
	25-30	1,050	22.5
	30-35	1,050	22.5

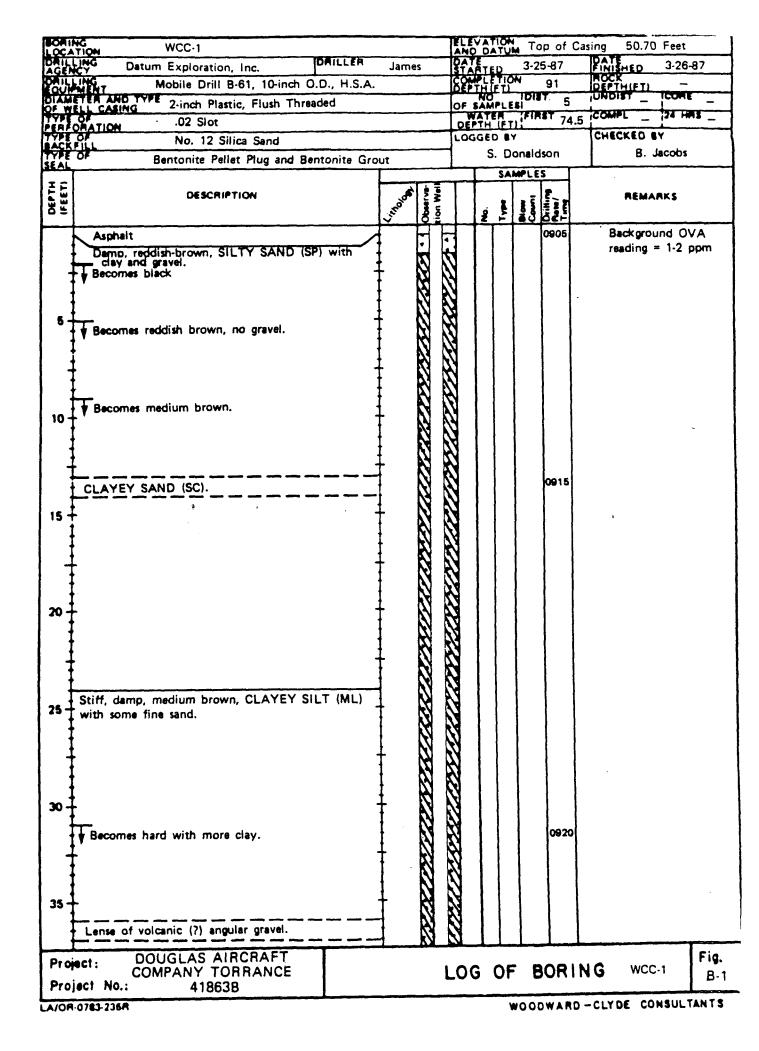
NOTE: Water samples collected 2 November 1987

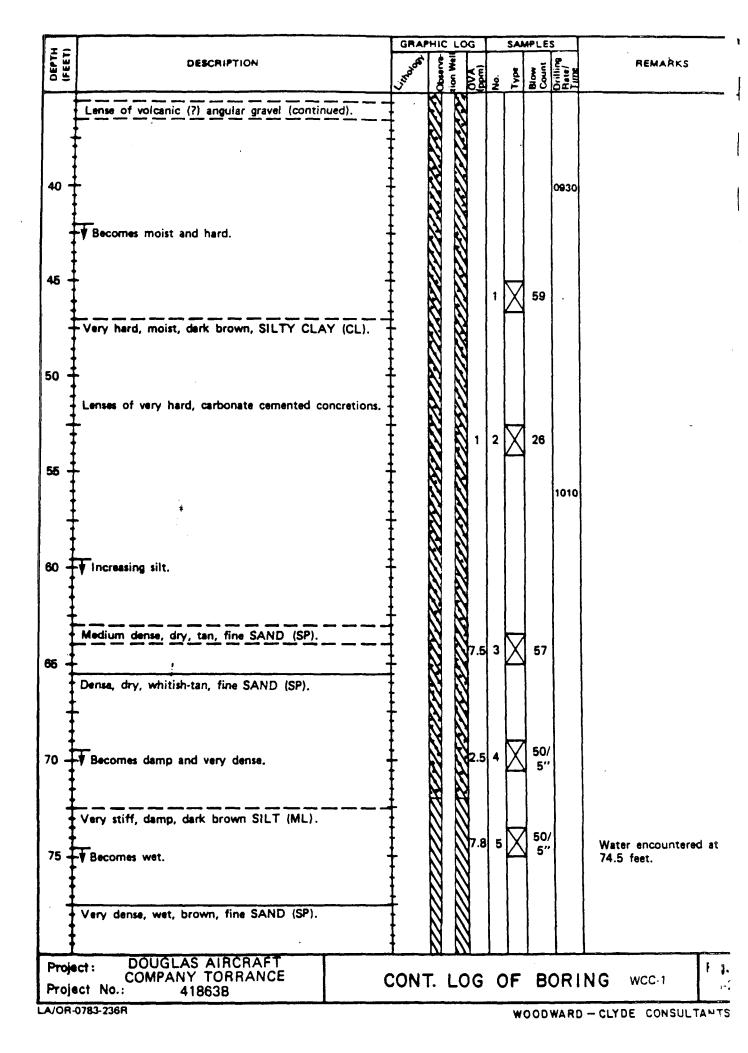
APPENDIX B

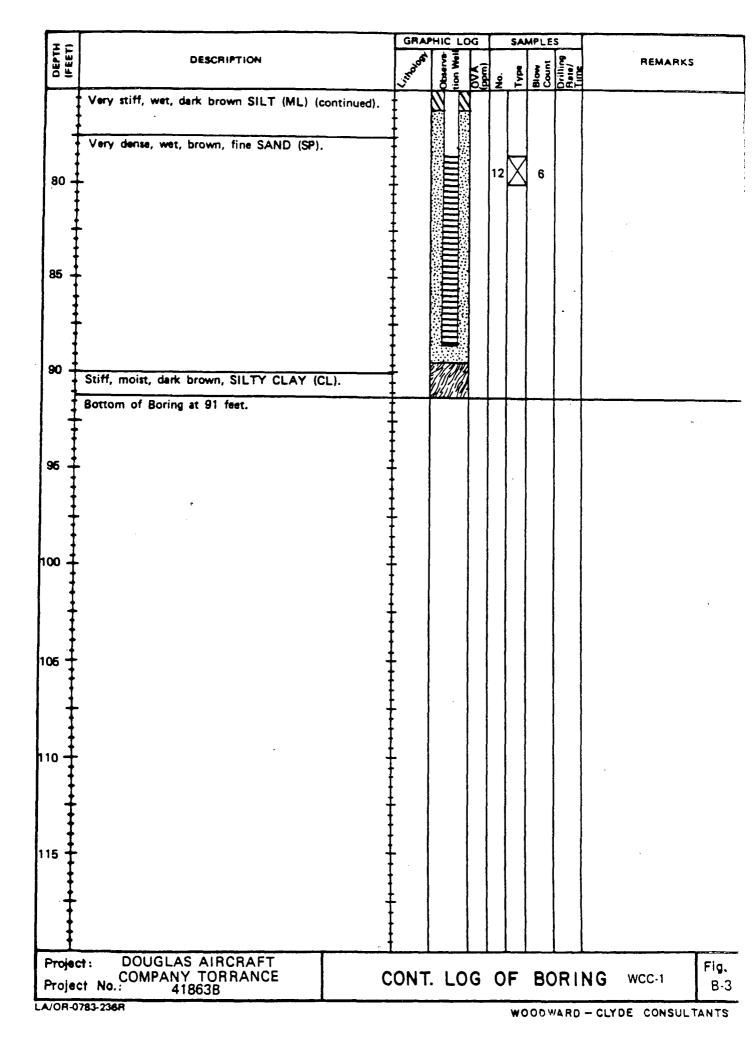
BORINGS LOGS

(ABC/DAPPA)

LOCATI LOCATI DRILLA AGENC DRILLA COUPE	QN				ELEV/	ATION	и			
DRELLA	ig Y	DRILLER			DATE				DATE FINISHED	
DRILLIN COUPE	ig Ment				COMP	HETIO			ROCK DEPTH (fb)	
TYPE D	A SING	SCREEN PERFORATION			DAN	ETER IG (in	OF .		DIAMETER OF MELL (h.)	
No OF	tist.	UNDIST.	CORE			00 6			CHECKED BY	
PHI OF THE THE	(ft)	COMPL	24 HRS.		1					
					SA	MPL	E			
E	ACCOUNT	101	WELL		NFOF	RMA	TION	9	951449145	
DEPTH (feet)	DESCRIPT	ION	100				0.V.A.	J	REMARKS	
٥			roc	<u> </u>		3		Oriting Rate (Time)		
10-	Medium dense, moist, light fine grained SAND (SM). Unified Soil Classification Sample Identification Number Concrete Bentonite Pellets Native Soil Monterey No. 0/30 Science Modified California Sample Concrete Bentonite (Volclay) Grain Science Number of Blows Required One Foot using a 140 Powith a 30—inch Drap. Organic Vapor Analyzer (Offield headspace). Rate at which Drilling Production of the concrete	System (USCS). — per. mand Filter Pack manufacture Sampund Downhole Ham EVA) Readings		₹ ↑		8.8	(ppm)	₽8		
35	Supervisor. ————		+							
Pro	ject: DOUGLAS AIRCRAF	T COMPANY		1.75	- \/	Τ^	D05	INIC	100	Fig
l	ing No.	1		Κŀ	Υ .	10	BOR	ang	100	8-
	87418	363D						wo	ODWARD-CLYDE CONSULTANT	







DRING CATION	N	W	CC-2	See	Figure				· · · · · · · · · · · · · · · · · · ·	ELE	VATION DATU	To	op of	casing © 50.59 ft	
TENCY	Α	& R [Orilling,	Inc.	ORBLIE	R A	vi. S	mit.	h	計	KTED	10-2	8-87	DATE 10-28-8	37
ALLING XIPEMI	ent				nch H.S	S.A.				CO	PLE 110	9	0.6	ROOK	
PE OF	SING 4"		HO PVC	SCREEN PERFORA	TION		O Slo	ot			METER BING (In	of S	10	DIAMETER OF 4	
OF LES	-	DIST.	_	UNDIST.	5	, 000		_		PX	SEED B	,		CHECKED BY	
ATER	R)	FIRST	73	COMPL	_	'24	HRS.	71.	1	1	r	l. Rey	es	B. Jacobs	
- 1								\Box			AMPL				
(ee)		n	ESCRIP1	DON.			WEL	┸┝		NF (ORMA?	ION	Ě	REMARKS	
			COCKI	1011			LO					0.V.A.	ية	I LEM CIVICO	
'									٥	è	Sen Sen	(ppm)	Ortifing Rate (Time)		
-	Asphalt							-	-		<u> </u>				
- { h	Medium a	tiff, very	moist,	dark yell	owish bro	wn,	7	F			Ì		1306	Background OVA	
15	SANDY CL	AY (CL)	•			•	7	74			İ			reading = 5 ppm	
1	— 8		dark gr	andah ha	D D.	•		14			- 1			*	
‡ ♦	Becor	nes very	dark gr	dylati bit	own.			N		1	1				
5‡						-		14]				
‡							7				[1308		
‡						:		[]		$\ \ $	Į				
‡						•					ļ				
<u> </u>	Color	change	to yellov	vish brow	wn. Becor	nes :	11	13							
5 ‡∨	atiffer	less m	oisture,	SANDY	CLAY (CL)).		1			l		1		
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‡			¥				13								
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5{						•	11	17					1317	1.	
1	-		10V 5: :	v /a: \			12	H					1.317		
_	Contin	nued SAI moist.	NUT GLA	1 (CL).	Less stiff	· .	17	13		$ \ $					
ł	11.013														
ł							[]	FA							
0]															
Ŧ							K	13					1319		
Ţ	Grade	s to SIL	TY CLAY	(CL).			N	N							
1,	Medium s				own, SILT	Y	71	13							
† 0	CLAY.	,					1/2	1							
5‡							1/1	11							
1							17	17				}	1323	3	
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-		A			450 44114									1	~
	ect: DOU ect: No.:		AIRCRA	FT CO	MPANY				LC	ЭG	OF	FIOR	RING	WCC-2	Fi 3

Sulfi, moist, olive brown, fine grained, Silfy SAND (SM), with shells. 1	DEPTH (FE)	DESCRIPTION	WELL	Š	•dx	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
SLTY SAND (SM), with shells. 1	40	(continued) Stiff, moist, clive brown, SILTY CLAY (CL).								
Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining. 85 Dense, maist, alive, fine grained SILTY SAND (SM), some iron oxide stains. 86 Dense, moist, alive, fine grained SILTY SAND (SM), some iron oxide stains. 87 Very dense, wet, alive brown, fine grained. 88 SILTY SAND (SM). 89 Decomes wet. 80 Tight have brown, fine grained. 81 Tight have brown, fine grained. 81 Tight have brown and fine grained. 81 Tight have brown and fine grained. 81 Tight have brown and fine grained. 82 Tight have brown and fine grained. 83 Tight have brown and fine grained. 84 Tight have brown and fine grained. 85 Tight have brown and fine grained. 86 Tight have brown and fine grained. 87 Tight have brown and fine grained.	45	Dense, maist, alive brown, fine grained, SILTY SAND (SM), with shells.		1	X	34	5	1342		
Very dense, damp, strong brown, fine grained SAND (SP) to SILTY SAND (SM), iron oxide staining. Becomes SICTY SAND. Becomes SICTY SAND. Becomes wet. 75 Very dense, wet, olive brown, fine grained. SILTY SAND (SM). SILTY SAND (SM). Project: DOUGLAS AIRCRAFT COMPANY CONT. LOG OF BORING WCC-2 Fig.	50							1357		
Becomes SICTY SAND. 1423 Dense, moist, olive, fine grained SILTY SAND (SM), some iron oxide stains. 3 42 6 1433 70	55	Very dense, damp, strong brown, fine drained SAND (SP) to SILTY SAND (SM).		2	X	60	5	1402	-	
Dense, moist, olive, fine grained SILTY SAND (SM), some iron oxide stains. 70 Becomes wet. 75 Very dense, wet, olive brown, fine grained, SILTY SAND (SM). Project: DOUGLAS AIRCRAFT COMPANY CONT. LOG OF BORING WCC-2 Fig.	60	iron oxide staining.						1423		
Becomes wet. 75 Very dense, wet, olive brown, fine grained, SILTY SAND (SM). Water at 73 feet 4 68 6 1512 Project: DOUGLAS AIRCRAFT COMPANY CONT. LOG OF BORING WCC-2 Fig.	65	Dense, malst, olive, fine grained SILTY SAND		3	X	42	6	1433		
Very dense, wet, olive brown, fine grained. SILTY SAND (SM). 4 68 6 1512 Project: DOUGLAS AIRCRAFT COMPANY CONT. LOG OF BORING WCC-2 Fig.	70							1500		
Project: DOUGLAS AIRCRAFT COMPANY CONT. LOG OF BORING WCC-2 Fig.	75	. Very dense, wet, olive brown, fine grained,		4	X	68	6	1512	☑ Water at 73 f	feet.
CONT. LOG OF BORING WCC-Z								1544		
· Ulbut I-U — ————————————————————————————————		•	CONT.	()G	OF	BOR	ING	1100 2	ig. 1-2

DEPTH (feet)	DESCRIPTION	WELL.	No.	•dK_	- E	0.V.A. (ppm)	Oriting Rate (T.)	REMARKS
85	(continued) Very dense, wet, olive, fine grained to very fine grained SILTY SAND (SM), micaceous, with some clay interbedding and iron exide staining.		5		50/ 3"	5	1600	
95	Battom of Boring at 90.5 feet.							Note: 48 gallons of city water used to offset hydro- static head of flowing sands during well instaliation.
100		* * * * * * * *						-
105	* ·	† † †						
110		+						
115		‡ ‡						
120		† †						
125	•	† • • • •						
	ject No: 87418630	CONT	. L(og —	OF	BOR		WCC-2 Fig. B-1

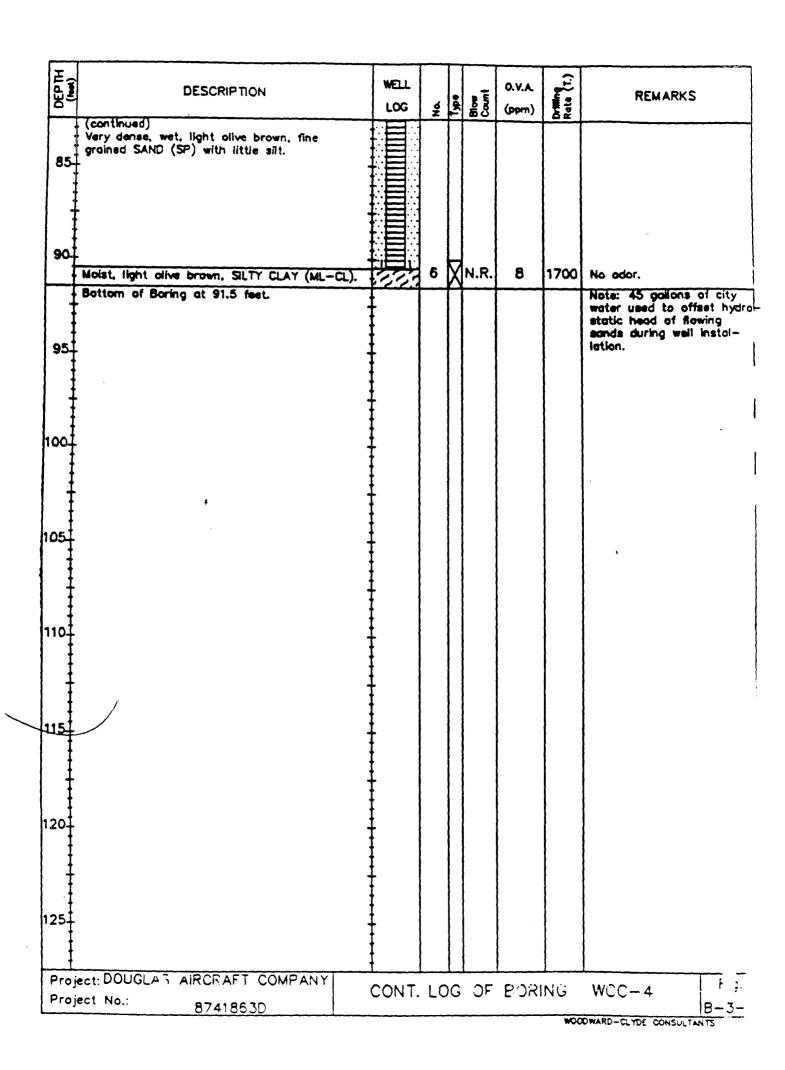
DORING LOCAT	WCC-3 See Figure 2			<u>tir</u>	VATION	, To	p of	Casing • 51.19	ft.
	IG A & R Deilling Inc. DRILLER I	M. Smi	th	EXP.	DATU. E RTED	10-26		DATE 10-26-	
ACENC DRILLI	CME 75 10-inch H S A				PLE TION		92	ROCK DEPTH (ft)	
		0 Slot		DA	METER (OF 4	10	DIAMETER OF 4	
NO OF				LOC	ED BY	,		CHEDGED 81	
NO OF SAMPL WATER				\dashv		l. Reye	s	B. Jacobs	
אַניפס	(ft) FIRST 73.5 COMPL _ 24	HRS. 74	1.0			 -			
DEPTH ((met)	DESCRIPTION	roc Mett		NFO	AMPLE RMAT PRODUCTE TURNO COMPANDE		Drilling Rote (Thne)	REMARKS	
5	Asphalt Damp, very dark grayish brown, fine grained SILTY SAND (SM) with small gravel. Soft, very moist, dark gray to black SILTY CLAY (CL). Becomes less moist, dark yellowish brown, stiff. Continued SILTY CLAY (CL). Becomes more stiff, no detectable ador.							Background OVA reading = 4–6 p	opm -
15	Dense, moist, yellowish brown, CLAYEY SAND to SANDY CLAY (SC-CL).						0855		
20	Grades to SILTY CLAY (CL). Stiff, moist, dark yellowish brown SILTY CLAY.						0857	No odor.	
25							0905	No odor.	
30 <u>.</u> 35 <u>.</u>	Lens of volcanic ash.						0913		
	ject: DOUGLAS AIRCRAFT COMPANY						NIA.	WCC 7	Fig.
Pro	Jeet Booolas Aircraft Com 7111		1 4	\neg	/) L.		INI.	י ר — וועע	-
	ject No.: 8741863D		L	OG	OF	BOR	ING	WCC-3	.; - Ž-

DEPTH (Max)	DESCRIPTION	WELL	o Z	1ype	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	(continued) Stiff, moist, olive brown, SILTY CLAY (CL).						0921	
45	Lens of stiff, moist, olive, SANDY SILT (ML), micaceous with decomposed pieces of roots.		-	X	25	30	0924	Earthy odor.
50	Clay becomes more stiff, interbedded with						0937	
55	lenses of dense, moist, yellowish brown, medium grained SILTY SAND (SM) with shells, partially comented and crystalized calcite.		2	X	30	570	0945	Moderate chemical odor.
60	Dense, moist, yellowish brown to olive gray, very fine grained SILTY SAND to SAND (SM-SP), micaceous.						1005	Easier drilling.
65	(am- ar), inicuceous.		3	X	45	440	1015	Moderate to strong chemical odor.
70-	Very stiff, very moist, olive brown, SANDY SILT (ML), micaceous with iron oxide stains.							Very easy drilling.
/0			4	X	35	+1000	1035	Strong chemical odor.
75	Becomes wet. Very dense, wet, olive brown fine grained SANI (SP) to SILTY SAND (SM).		5	X	59	+100	0 1047	▼ Water at 73.5 feet. Strong chemical odor.
80-	Becomes medium grained.		6	X	N.R	.+100	0 1112	
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 87418630	CON	T. L	00	OF	BOR		WCC-3 Fig. B-2-

DEPTH (Fex.)	DESCRIPTION	WE	G ,	Type	Blow	O.V.A. (ppm)	Drilling Rate (T.)	REMARKS
85	(continued) Very dense, saturated, olive brown, fine to medium grained SAND (SP—SM) with some silt.						1205	Moderate to strong chemical odor.
90						;	1545	
95	Bottom of Boring at 92.0 feet.	+						Note: Used 59 gallons of city water to offset hydrostatic head of flowing sands during well installation.
100		+						
		† † †						
105		+						
110		† †						
115		•	ŀ					
120								
105	. •	+				·		
125	0010 40							
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863D	.co	NT. 1	LOC	OF	BOR		WCC-3 Fig. B-2-3 ODWARD-CLYDE CONSULTANTS

DORING	C KON			WCC			e Figi				E1	EVATIO D DAT	N To		casing • 49	
DELL	IG Y	Α	& F	? Dri	lling,	Inc.	P	RULLER	M. S	mith		ATTED	10-2	7-87		-27-87
	IG EMENT							H.S.A.				MPLE!	ON G	91.5	ROOK DEPTH (fl)	
TYPE (CIF CASING	4"	Sch	40	PVC	SCREE	N RATION		10 SI	ot	- 2	METE BNG COED	or in	10	DEALETER OF	4
No O	f S		DIST.		-	UNDIS.	τ. ε	3 6	ORE	_	μ				ICHECOGED BY	
Barre Barre	//\\		FIRST		75	COLPI	-	- 12	4 HRS.	71.€	5		H. Rey	æs	B. Jo	cods
DEPTH (feet)		,,			CRIP	TON			WEI LO	ц_			NOITA	Dritting Rate (Time)	REMAI	RKS
5.	Moist	(a.	•				Y CLAY		**************************************	NO COO CONTRACTOR OF THE PARTY					Background reading = 4 No odor.	OVA -6 ppm
15.									TANK TANK TANK	NAMES OF THE OWNERS OF THE OWNER,						
25									TATAL MARKET							
35-		Le an	nse c gular	of dan	k gree	enish b	olack w	olcanic(
De	o io cé	ומם	IGI A	5 411	RCR A	FT C	OMPA	NYT							W00 :	F.
				- A	, 🔾 , 🖯	•	<u></u>				1.0	G C	F BO	RING	WCC-4	-
	oject	 			8741	<u> 5630</u>									OODWARD-CLYDE CO	15

DEPTH (Next)	DESCRIPTION	LOG	ģ	ed()	Blow	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40 45	Very stiff, organic roots and plant detritus with arangish iron oxide staining.		1	X	18	8	1345	No odor.
50								
55	· · · · · · · · · · · · · · · · · · ·		2	X	23	8	1350	No odor.
60	Occasional fossiliferous gravel.							
65	Hard, light alive brown, fine SANDY SILT to SILTY fine SAND (SM).		3	X	43	5	1425	No odor.
70								
75	Becomes wet. Hord, damp, light alive brown, SILTY CLAY (CL) with iron exide staining.		4	X	42	7		∑ Water at 75 feet.
	Very dense, light olive brown, fine grained SAND (SP) with little silt. 2 inch layer of CLAY (CL).		5	X	45	8	1530	No odor.
Pro Pro	ject: DOUGLAS AIRCRAFT COMPANY je No.: 87418630	CONT.	L(og 	OF	BOR		WCC-4 Fig. B-3-:



BORING	See Location Map			EL	EVATION ON	N Ju		Not Available	
DRILLIN	IG A & P. Deilling Inc. ORILLER M	l. Rom	ero		TE ARTED		1 -87	DATE 8-24	-87
ORILLIN EQUIPE	IC CHE 15 8 inch OD HS 1			ICC	MPLETI PTH (#	ON	41	ROCK DEPTH (ft)	-
TYPE (OF N/A SCREEN N	N/A		D1/	METER	QF .	8	DIAMETER OF	
No OF	DIST 'UNDIST. Q 'CO			LO	RING (Y Y		WELL (in.) CHECKED BY	
<u>SAMPL</u> WATER	FIRST COMPI 24	HRS.		\dashv	Ρ.	Glaesi	man	M. Razmd	joo
OEP TH	(ft)	1		۰	2410				
_					SAMPI ORMA		<u>.</u>		
DEPTH ((eet)	DESCRIPTION	WELL		П			Ę	REMARKS	
범		LOG			٦ تو	0.V.A.	g -		
		}	ģ	Type	Blow	(ppm)	Drilling Rate (Time)		
	Asphalt covering. Medium dense, damp, yellowish brown, SILTY fine to medium grained SAND (SM), micaceous, 4—inch CLAYEY layer near surface. (FILL)		1	X	9	10		Definite odor.	
5	Loose, damp, yellowish brown, fine to medium grained SAND (SP—SM), with some SILT, micaceous, (FILL).		2	X	2	52	1240	Strong odor.	
10	Color changing to gray with some yellowish brown mixed in. Less silt, micaceous (SP).(FILL)	† †	3	X	2	600	1250	Strong odor.	-
15	Stiff, moist, olive brown, CLAYEY SILT (ML), micaceous.		4	X	11	>1000	1300	Strong odor.	
20	Stiff, moist, clive brown, SANDY SILT (ML), micaceous.		5	X	9	>1000	1310	Strong odor.	
25	Stiff to very stiff, mast, alve brown, CLAYEY SILT (ML).		6	X	14	>1000	1320	Strong odor.	
30			7	X	20	>1000	1335	Strong odor.	
35	With some fine grained SAND (ML).	† †	8	X	10	>1000	1345	Strong odor.	
Pro	ect: DOUGLAS AIRCRAFT COMPANY		10	10	٥٥	BORI	NC	15TP	Fig.
•	and No.		ĽĹ	JU	U۲	DUKI	ING	15TB	B-4-1
	8741863C						WOO	DWARD-CLYDE CONSULTAN	TS

DEPTH (lost)		WELL LOG	No.	Type	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS	
40			9	X	17	>1000	1400	Strong odor.	
45-	Battom of Boring at 41 feet.								
50									
55		† † † † †							~ .
60	.	+ + + + + + + + + + + + + + + + + + + +							
65									
70		† † † †							
75		† † † † † †							
80									
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863C	CONT	. L()G	OF	BOR		15TB	Fin B-4 !

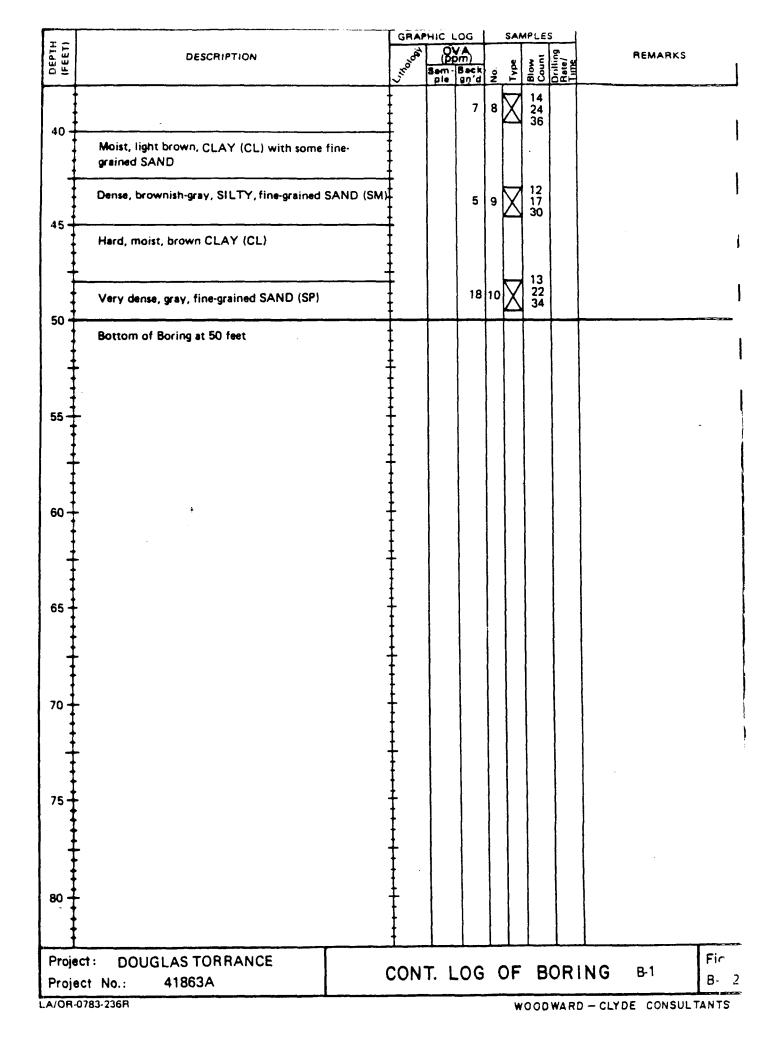
BORIN	c See Location Map	· · · · · · · · · · · · · · · · · · ·		EL	EVATION ID DAT	i JM		Not Available
DRILL	NG A R. D. Deilling Inc. DRILLER M	. Rom	ero	ST.	ARTED	8-24	4-87	DATE S-24-87
DRILL		١.		CC	MPLETI	ON	41	ROCK — DEPTH (ft) —
TYPE		V/A		Di.	AMETER RING (i	OF പ	8	DIAMETER OF N/A
No OF	' DIST. 'UNDIST. A 'CO	RE _	_	Lo	CCED 8	ΙΥ		CHECKED BY
WATER DEPTH	FIRST COMPL 24	HRS.			۲,	Glaesi	nun	M. Razmdjoo
					SAMPL			
DEPTH (feet)	DESCRIPTION	WELL		INF	ORMA	TION) (9)	DEMARKS
g 🖺	DESCRIPTION	LOG			اب	O. V. A.	جَجَ	REMARKS
			ò	S.	Blow Count	(ppm)	Drilling Rate (Time)	
	Asphalt covering. Medium dense, moist, yellowish brown, SILTY fine to medium grained SAND (SM), micaceous(FILL)		1	X	11	75		Little odor.
5-			2	X	2	200	1510	Sample was between the tank backfill and natural material. One edge of sample included natural material, SANDY SILT (ML)
10-	Stiff to very stiff, moist, yellowish brown, SANDY SILT (ML), micaceous.		3	X	16	30	1515	No odor.
15-			4	X	12	45	1530	Slight odor.
20-			5	X	17	60	1540	Slight odor.
25	- -		б	X	17	950	1545	Definite odar.
30-	Olive brown, CLAYEY SILT layer (ML).		7	X	18	>1000	1600	Strang odar.
35-			8	X	16	>1000	1610	
Pro	ject: DOUGLAS AIRCRAFT COMPANY	 -	·	<u> </u>	~-		NO	17TD Fig.
	inal Na.		L	JG	UF	BORI	NG	17TB 19.
	8741863C						WOO	OWARD-CLYDE CONSULTANTS

DEPTH (lest)	DESCRIPTION	WELL LOG	No.	Type	Blow Count	0.V.A. (ppm)	Dritting Rate (T.)		REMARK:	5
40			9	X	26	>1000	1620			
45	Battom of Boring at 41 feet.						ł.	1	Vertical	boring.
50										
55	·									
60	. *									
65										
70	- - - -									
75										•
	ject: DOUGLAS AIRCRAFT COMPANY ject No.: 8741863C	CONT	LC)G	OF	BOR	ING	17TI	 B	Fi:

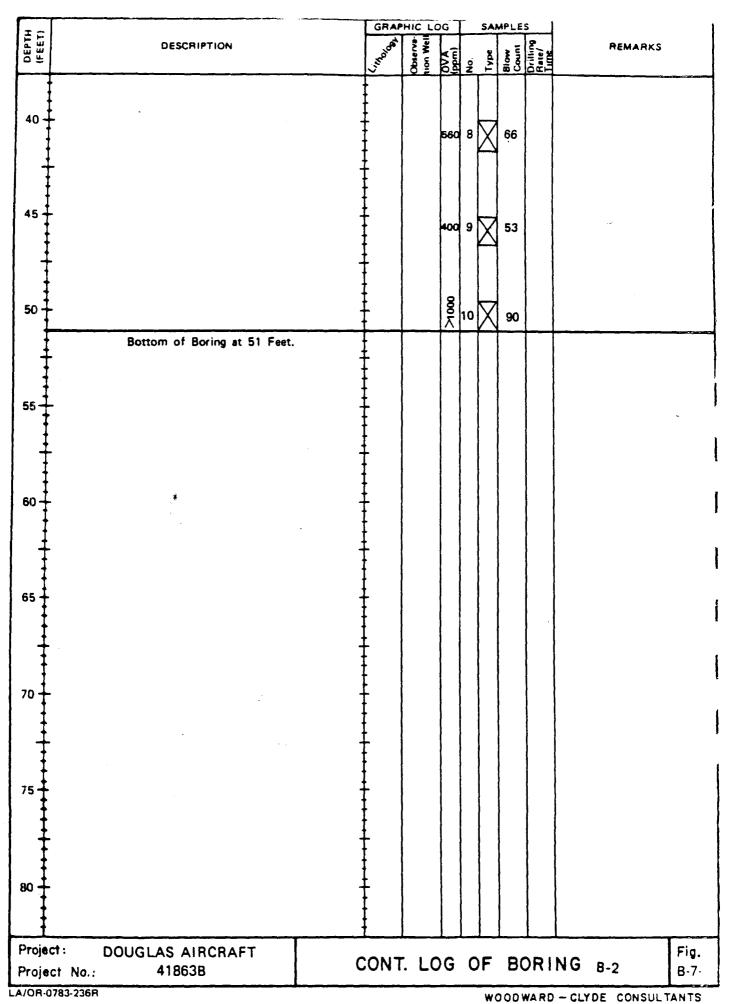
LOCA	NG B-1 Tanks T-19 and T-	20			LELE	ELEVATION AND DATUM								
	LING C. C. L.	ILLER K	eith			_		ril 1986	DATE FINISHED	April 1986				
PAIL	LING PMENT Mobile 8-53, 9.5 Hollow Stem Auger				COM	PLE	ION Ti	50	HOCK DEPTH(FT)	_				
DIAM	ETER AND TYPE ELL CASING None Installed					NO.	10	IST.	UNDIST.	COME				
TYPE					T W	ATE	1 F	AST_	COMPL.	24 HRS.				
TYPE	OF PERFORATION No. 50 Cond (050) / Postoni	te Flour	(15%)			GED			CHECKED 8	iY:				
TYPE					1		M. Le	ach	В	lacobs				
SEAL		· · · · · · · · · · · · · · · · · · ·	GRAPHIC LO				SAMPL	ES						
DEPTH (FEET)	DESCRIPTION			-01										
3 =			Jerger	Qam.	Back	ė	A Dig	Pare/	REMA	HK3				
-	Acost*		>_	ple	au q	Z	- = () OE-						
	Rust colored, SILTY SAND (SM)	/=							ya."					
		 / }	_				i							
-	Medium stiff, moist, dark brown, SANDY CL	AY T	F			 	- 6	1 1						
;		•		0.0		1)	$X \mid 4$		•					
5 -	• -	-	-			۲	- 3	1 1						
] ;	Becomes very moist	•	•				1	1 1						
1 1		_					1							
]	-		ŀ											
}		1	-	30		2	7 15			•				
_	Becoming light reddish brown and hard	-	[~		K	2:							
10			•	ļ		1								
1						li	-			-				
]			[
1 7		-	[İ			⊣ 6	1 1						
]			•	34		3	X 12							
15	Becoming light brown and very stiff	_		•		l K	<u> </u>							
'	A pacountal unite promutane ser à strut	-		İ		1								
ΙŢ						1	- {							
‡	Medium dense, moist, light brown, CLAYEY	fine.]	1								
	grained SAND (SC)	, 11/1 9 *		l		lk	- 11	.						
1	• • • • • • • • • • • • • • • • • • • •			100		4	X .8							
20 +	T Bassarian History beautiful	-	<u> </u>		}		13	'						
I	Becoming lighter brown and drier	}			Ì		- 1							
‡		•		}	l		- }							
‡	•	-	•											
<u>†</u>		•	ţ	E0			√ 100							
25			Ł	50	İ	5	$\Delta \Gamma$	á						
437	Very stiff, moist, light brown, SANDY CLAY	Y (CL)	F			[
‡	Carly Courty Courty Carlo and Courty at the Courty		[1							
1	•	-	L											
l			t				∀ 8							
			ł	45		6	X_{30}^{15}	5	·					
30 🕇	Variable main links have 01 AV 1011		F	1		[JI	1	1					
‡	Very stiff, moist, light brown, CLAY (CL)		Ŧ											
‡		•	ţ	1					Ì					
1	•	-	ţ		1	1 1	۽ لي		1					
İ	Very dense, light grayish-brown, fine-grained		t	4		7	$\bigvee 2$	7	1					
{	SAND (SP)		Ł	[1 1		0	<u> </u>					
35	-	-	Ī				'	` '						
‡	•		Ī		[
<u>+</u>			<u> </u>	<u> </u>	<u> </u>			L	<u> </u>					
Proje	ct: DOUGLAS TORRANCE						، سے	·	NO	Fig.				
Proi	ect No.: 41863A			l	_OG	O	ודי	BORI	NG B-1	B-6-1				
,	7100071													

LA/OR-0783-235R

WOODWARD-CLYDE CONSULTANTS



OAII				AND	ATIO	N COM	Appr	oximately 52 Feet MS	L
OF A	DATUM Exploration, Inc.	Kit Step	hens	STA			9/86	PATE FINISHED 1/5/87	
	Simco 2400SK, Datum D27-L (Dietrich G			_	H (FI		51´	ROCK -	
DIAM	6" Hollow Stem Auger; No Casi						π	UNDIST. 20 CORE	
14	PATION - N/A			W	TH (F	FIR	5 1 _	COMPL 24 HM	5
TYPE	OF PERFORATION N/A			LOG	GED	BY:	. I de o o	CHECKED BY:	
TOPE	Concrete, #60 Silca Sand (85%) and Bentonite (15%)		J		/ Dona Gibson		Sd	
I C		GRA	HIC L	OG SAMPLES			8	-	
DEPTH (FEET)	DESCRIPTION	JA			. 1	1 2 5	E 3 2	REMARKS	
ے ۵		3	8 3	8.6	<u> </u>	38	2 d E	·	
	Concrete and pea gravel.	4						Hydrocarbon odor	
	Stff, damp, olive to brown SILTY CLAY (CL-CH).	‡		250	1 2	NR		-	
5		***************************************		300	2	NR		Hydrocarbon odor a staining throughout boring.	
10 -		+ + + + + + + + + + + + + + + + + + + +		140	3	NR		-	
15	Becomes olive to dark olive green.	+ + + + + + + + + + + + + + + + + + + +		440	4 2	NR	-		
20 -		+++++++++++++++++++++++++++++++++++++++		000 K	5	NR			
25-		+ + + + + + + + + + + + + + + + + + + +		560	6	NF	3		
30 -) Gravel lense (to 2"ダ).	¥ + + +		460	7	NI	3	Drilling difficult- S drilling. Commence drilling on 1/5/87 with da	at 3
35 -	Becomes hard and grey, sandy, and thinly laminated. Becomes silty.	+++++++++++++++++++++++++++++++++++++++		96X	7	7!	5	D27-L rig.	, UIII
Pro	ect: DOUGLAS TORRANCE							INC	Fig.
ł	ject No.: 41863B		ŧ	_0(5 (יר t	SUK	ING B-2	B-7
	1-0783-236R					woo	DWAF	RD-CLYDE CONSULT	ANT



SOA!					ATI	SN .	Ann	oximately 52 Feet MS	
	Datum Exploration, Inc	Kit Step	hens	STA	DAT		/6/87	PATE FINISHED 1/6/8	
	Detum D27-L (Dietrich Gesoline Engine)						31'	POCK DEPTH(FT) -	
DIAM	6" Hollow Stem Auger; No Casi	ing Install	ed	OF E	NO.	L ESI	_	UNDIST. 12 CORE	- 1
177	PHATION N/A				TH (FT) F11	IST No	one COMPL 24 HP	18
TYPE	OF PERFORATION N/A				GED			CHECKED BY:	
TYPE SEAL		(15%)			S.	Donald	ison	Sd	
			HIC L	og]		AMPLE	3		
DEPTH (FEET)	DESCRIPTION	**	13	ادرا		. . =	E .	REMARKS	
2 =	-	38	8 5	3	9	100	S P	:	
	Concrete	7		П					
l I	Dense, damp, light grey, fine SAND (SP) with	i i			- 1	1			
 	FeO ₂ staining and hydrocarbon odor.	A 1			1				
] {		1					1	-	
,	Stiff, damp, dark brown SILTY CLAY (CL-CH).	· 🗜 🔝			L		1 1		
		‡		310	1	48	1 1		
		1			۲	4			:
‡	•	†				-			
	•	‡							:
10	} Gravel lense (≤ 2"Ø).	1			L	1/20			
	Becomes hard.	‡]		105	2	30 50/			-
‡		‡			۴	- } 5″			
	•	†							
ł		-				-			
15	. Medium dense, damp, grey CLAYEY SAND	‡			K	_		Easier drilling	
1 ‡	(SC) strong hydrocarbon odor.	‡		62	3	27		ł	
		†			1	7			
🕇		†					}		
		1							
20 ‡	Becomes dense and greyish brown.	#			k	_	1 :		
	Becomes dense and groyion brown.			350	4	X 47			
‡		‡	!	1		7		1	
‡		†							
‡		‡ !				1			
25	Becomes very dense, grey, more	‡ !			k	_			
	SANDY (SC-SP).	†		260	[5]	X 65			
‡		‡			ľ	7			
‡		†							
‡		‡				_			
30 ‡		‡		340	6	X 66			
+	Bottom of Boring at 31 Feet.	+			\sqcap				
‡	•	†					1		
‡		7	l				1		
		†							
35 +		+					1	1	
1		‡	1	1		1			
#		<u> </u>	<u> </u>	1					
Proje	et: DOUGLAS AIRCRAFT				_	_			Fig.
_	oct No.: 41863B		L	OG	0	FE	OR	ING B-3	B-8-1
1								1	

LA/OR-0783-235R

WOODWARD-CLYDE CONSULTANTS

CRING		ee Map		ELI	EVATION D DATU	м	N	ot Avai	lable	
RILLIN	G A & D Deilling DRILLER	M. Smi	th	DA	TE ARTED	5-26	-87	IDATE IFINISHED	5-26-	-87
RILLIN	GME 75 8—inch O.D.,H.S.	Α.		CO DE	MPLETIC PTH (ft)	6	1.5	IROCK DEPTH (1	(t)	
ETT (F _ SCREEN ASING PERFORATION			BIA BO	METER RING (in	OF	8	DIAMETER WELL (in	R OF	
a OF AMPL	DIST 'UNDIST. 10 'C	CORE	-	LO	CCED 8.	Y		CHECKED	BY	
ATER EPTH	FIRST COMPL '2	24 HRS	-	1	۲.	Glaesr	man		B. Jacob	s
2717					SAMPL	E				
r l		WELL			ORMA		হ			
OEPTH (feet)	DESCRIPTION					0.V.A.	를	F	REMARKS	
33		LOG	_	9	Blow		e ≣			
			ģ	gy1	ဆိုပိ	(ppm)	Orilling Rate (Time)			
+	5" Asphalt Cover.				İ		1330			
ļ	Damp, reddish brown, SILTY fine grained SAND (SP), with some CLAY and GRAVEL.	' I			1	į	ł			
‡	(logged from cuttings only)	†								
ţ	· · · · · · · · · · · · · · · · · · ·	†								
Ì		<u>†</u> 1								
5-		+								
‡	Damp, yellowish brown, SILTY fine grained SAN (SM-SP).	<u>'</u>				J]			
‡	(SIM SI).									
†		†				ĺ				
ł		†					}			
10		<u>†</u>)					
Ţ		Ŧ				1				_
‡		Ţ								
‡		‡				ļ				
Ì		†	i		}					
Ŧ	· ·	i l		Н	}	40	امميما			
15‡		+	1	M	{	40	1400			
‡		‡·		П	}					
‡		‡								
+		†			. 1					
Ŧ	Damp, medium gray, CLAYEY SILT (ML), some	t		Ш				l I		
7 , ‡	fine grained SAND, brown oily staining in	1	2	M]	500	1420	Strong	odor.	
20	tube #4.	Ŧ	_	凶				3	•	
<u></u>		‡								
f		<u> </u>								
Ŧ		ł	}							
‡		Ţ		H						
25‡		‡	3	ΙXI		550	1450	Strong	odor.	
1		‡		H						
Ŧ		ł								
‡		Ŧ	j			İ				
‡		Ţ								
_		‡	4	∇		550	1515	Strong	odor .	
30]		‡	}		,					
1		<u> </u>	1		}					
Ŧ		<u> </u>	1	'				1		
‡		Ť		1	1			1		
‡	Very damp (product), brownish gray, SANDY	‡	}	<u></u>]			
35	SILT to SILTY SAND (SM), free product on	‡	5	X		+1000	1535	Strong	odor.	
	tubes.	t		۲	4					
‡		Ŧ				l				
		· †	<u> </u>	_	<u> </u>	L	<u></u>	<u> </u>		T =:
Pro	ject: DOUGLAS AIRCRAFT COMPANY		1 ()G	OF	BOR	ING	B-4		Fig.
Pro	ject No.: 41863B		_ `		<u> </u>			-		B-9-1
							WOO	XOWARD-CLY	DE CONSULTA	NTS

DEPTH (feet)	DESCRIPTION	WELL LOG	No.	Туре	Blow Count	0.V.A. (ppm)	Drilling Rate (T.)	REMARKS
40	Damp, gray, CLAYEY SILT (ML). on tubes.	† † † †	6	X	N/A	700	1550	Strong odor.
45	- -		7	X	11	400	1620	Strong odor.
50	Damp, brown, SILTY fine SAND (SM-SP), micaceous.		8	X	11	400	1645	Strong odor.
55			9	X	11	+1000	1710	- ·
60	Damp, light yellowish brown, CLAYEY SILT (ML).	-	10	X	11	100	1750	Slight to moderate odor.
+	Bottom of Boring at 60.5 feet.							Note: Angle drilled at 26. No blow counts taken due to angle drilling.
65								
70								
75								
80		† † †						
	ect: DOUGLAS AIRCRAFT COMPANY ect No.: 41863B	CONT.	L_C)G	OF	BORI		B-4 Fig. B-9-2

APPENDIX C

WATER AND SOIL ANALYTICAL RESULTS WITH CHAIN-OF-CUSTODY FORMS

(ABC/DAPPA)

April 2, 1987

WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 5557



LABORATORY REPORT

Samples: One (1) water sample

Date Received: 3-27-87
Purchase Order No: 41863B

The sample was analyzed for volatile organic compounds by GCMS according to EPA method 624. The results are reported in the following Organics Analysis Data Results sheets.

Page 1 of 1

Michael Shelton Senior Chemist D.J. Northington, Ph.D. Technical Director

CLIENT: WOODWARD-CLYDE SAMPLE: MW-1 (41)A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:

03/27/87

GCMS FILENAME:

5557V3

LEVEL:

LOW

MATRIX:

WATER 04/01/87

DATE PREPARED:

04/01/87 VDA280

DATE ANALYZED: INSTRUMENT ID:

5101

STANDARD ID: SAMPLE AMOUNT: 100UL

DETECTION

CAS #	COMPOUND		UG/L(PPB)	LIMIT
2222222222	20mm 40mm	****		
	aru anguetirarie		ND	300.
74-87-3	CHLOROMETHANE		ND	300.
74-83-9	BROMOMETHANE		ND	300.
75-01-4	VINYL CHLORIDE		ND	300.
75-00-3	CHLOROETHANE METHYLENE CHLORIDE		ND	500
75-09-2			ND	500.
67-64-1	ACETONE ACROLEIN		ND	500.
107-02-8			ND	500.
107-13-1	ACRYLONITRILE CARBON DISULFIDE		NE	50 .
75-15-0	1, 1-DICHLOROETHENE		2800.	5 0.
75-35-4	1,1-DICHLOROETHENE 1,1-DICHLOROETHANE		NE	50.
75-34-3	TRANS-1, 2-DICHLOROETHENE		ND	50
156-60-5			ND	50.
109-99-9	TETRAHYDROFURAN		NE	50
75-69-4	TRICHLOROFLUOROMETHANE		ND	5 0.
76-13-1	FREON-TF		ND	50.
106-93-4	ETHYLENE DIBROMIDE		ND	50.
123-91-1	1,4-DIOXANE		ND	50
96-12-8	1, 2-DIBROMO-3-CHLOROPROPANE		ND	50
67-66-3	CHLDROFORM		ND	50.
107-06-2	1, 2-DICHLORDETHANE		NE	500
78-93-3	2-BUTANONE		300.	50.
71-55-6	1, 1, 1-TRICHLOROETHANE		ND	5 0.
16-23-5	CARBON TETRACHLORIDE		ND	300
108-05-4	VINYL ACETATE		ND	50.
75-27-4	BROMODICHLOROMETHANE 1, 1, 2, 2-TETRACHLOROETHANE		ND	50
79-34-5	1, 1, 2, 2-1ETRACHEURUE (HANE		ND.	50
78-8 7-5	1, 2-DICHLOROPROPANE		NE:	50
10061-02-6	TRANS-1, 3-DICHLOROPROPENE		4600	50.
79-01-6	TRICHLOROETHENE		ND	50
124-48-1	DIBROMOCHLOROMETHANE		NĿ	50.
79-00-5	1, 1, 2-TRICHLORDETHANE		85	50
71-43-2	BENZENE		מא	50
10061-01-5	CIS-1, 3-DICHLOROPROPENE		NE	500.
110-75-8	2-CHLORDETHYLVINYL ETHER		ND	5 0.
75-25-2	BROMOFORM		ND	366
119-78-6	2-HEXANONE		NE.	300
108-10-1	4-METHYL-2-PENTANONE		ND	5:
127-18-4	TETRACHLORGETHENE		ND	5 0.
108-88-3	TOLUENE			

CLIENT: WOODWARD-CLYDE

SAMPLE: MW-1(41)A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:

03/27/87

GCMS FILENAME:

5557V3

LEVEL:

LOW

MATRIX:

WATER

DATE PREPARED:

04/01/87

1,4-DICHLOROBENZENE

1, 2, 4-TRICHLOROBENZENE

DATE ANALYZED:

04/01/87

ND

DETECTION

50

STANDARD ID:

V0A280

INSTRUMENT ID:

5101

SAMPLE AMOUNT: 100UL

106-46-7

120-82-1

CAS #	COMPOUND	CONC: UG/L(PPB)	LIMIT
2222222222				
108-90-7	CHLOROBENZENE		ND	50
100-41-4	ETHYLBENZENE		ND	5 0.
100-42-5	STYRENE		ND	5 0.
95-47-6	TOTAL XYLENES		ND	5 0.
108-41-8	M-CHLOROTOLUENE		ND	5 0、
95-50-1	1, 2-DICHLOROBENZENE		ND	50
541-73-1	1,3-DICHLORDBENZENE		ND	5 0.
104-44-7	1.4-DICHLOROBENZENE		ND	5 0.

CLIENT: WOODWARD-CLYDE

SAMPLE: MW-1(41)A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/L(PPB)

1 NONE FOUND

VDA

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

		Woo	dward-	Clyde Consult	ants	SHIPM	ENT NO.:	
		C	HAIN OF	CUSTODY RECO	ORD	PAGE_	L_OF.	
	•		0.	lue - Torr	ante	DATE.	3 12	787
		CT NAME:	1110	7				
,	PROJE	CT NO.:	4100	38				
Sample Number	Location	Type of Material	Sample Method	Type of Container	Type	of Preservation Chemical	Analysis	Required*
MW-1/41)A		Luter	Grab	40 al Vial	dol	/ 82	12A	allende
MW-1(41)B		L!	· ·	Youl Viel			11	- 00
MN-1(41)c			7	Amber litre	AHO		w. 1 1	- Coult
MW-1(41)D		и	3	A orber like	1	7	Ans	14515
TOP BOLL	 	94	ا د	40 ml Vial		1		7
- It I Deale	†			70 100	1			
	 	 			+			
				· · · · · · · · · · · · · · · · · · ·	+			
	 	 			 	NAF	Ala	2(1)
	 				 	HUUIC	13 M	1000
·		 			 	1-111-60	dime	-
	<u> </u>					HII 25	aime	M 19
							 	
						SETTLE	تسما	- be
							 	
						taking	An	alysis
		*			1	1 - 4	<u> </u>	
						Same	-	
	 	 						
	 				1	h /		
Total Number of	Sample: Sh	iopadi 5	Samole	r's Signature:	Sun	()		
		ipped. 3 4	30	Received By:		404		Date
Relinquished By: Signature	Shany	ZNA		Signature	ul	SIL		327/8
Printed Name	Brial	Jaco	55	Printed Name		1 Shelton		
Company	mariner	1 - Clyd	4	Company	UCAS			5:42
ReasonAc	relasis					#5557		
Relinquished By:				Received By:				Date
Signature				Signature Printed Name				
Printed Name Company				Printed Name				Time
Reason								
Relinquished By:				Received By:				Date
Signature				Signature				_/_/
Printed Name								Time
Company				Company				1
Reason				=	<u> </u>	 _		Date
Relinquished By:				Received By:				/ /
Signature Printed Name								
Company				Company				Time
Reason								<u> </u>
Special Shipment			Requiremen	ts:				
	3	·	,			•		
					*			
• Alone This is				o proceed with analy	C16			
Note - Inis o	oes not cor	istitute auti	iorization t	o proceed with analy	313			A.OS-0163-42

April 16, 1987

WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 5677



ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples: Seven (7) water samples

Date Received: 4-13-87 Purchase Order No: 41863B

Three of the samples were analyzed for volatile organic compounds by GCMS according to EPA method 624. The results are reported in the following Organics Analysis Data Results Sheets.

Page 1 of 1

Michael Shelton Senior Chemist

D.J. Northington, Ph.D.

Technical Director

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1, A.

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 04/13/87 GCMS FILENAME: 5677V2 LEVEL: LOW MATRIX: WATER DATE PREPARED: 04/15/87 DATE ANALYZED: 04/15/87

STANDARD ID: VOA457 INSTRUMENT ID: =5100

SAMPLE AMOUNT: 100UL

CAS #	COMPOUND	 UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	 ND	300.
74-83-9	BROMOMETHANE	ND	300.
75-01-4	VINYL CHLORIDE	ND	3 00.
75-00-3	CHLOROETHANE	ND	30 0.
75-09-2	METHYLENE CHLORIDE	ND	5 00.
67-64-1	ACETONE	ND	500 .
107-02-8	ACROLEIN	ND	500 .
107-13-1	ACRYLONITRILE	ND	500 .
75-15-0	CARBON DISULFIDE	ND	50 .
75-35-4	1,1-DICHLOROETHENE	370 0.	50 .
75-34-3	1,1-DICHLORDETHANE	ND	5 0.
156-60-5	TRANS-1, 2-DICHLORGETHENE	ND	50 .
109-99-9	TETRAHYDROFURAN	ND	5 0.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5 0.
76-13-1	FREON-TF	ND	5 0.
106-93-4	ETHYLENE DIBROMIDE	ND	5 0.
123-91-1	1,4-DIOXANE	ND	5 0.
96-12-8	1.2-DIBROMO-3-CHLOROPROPANE	ND	5 0.
67-66-3	CHLOROFORM	ND	5 0.
107-06-2	1,2-DICHLOROETHANE	ND	50 .
78-93-3	2-BUTANONE	ND	500 .
71-55-6	1,1,1-TRICHLOROETHANE	2 60.	5 0.
16-23-5	CARBON TETRACHLORIDE	ND	50 .
108-05-4	VINYL ACETATE	ND	300 .
75-27-4	BROMODICHLOROMETHANE	ND	50 .
79-34-5	1, 1, 2, 2-TETRACHLORDETHANE	ND	5 0.
78-87-5	1,2-DICHLOROPROPANE	ND	50 .
10061-02-6	TRANS-1, 3-DICHLOROPROPENE	ND	50 .
79-01-6	TRICHLOROETHENE	55 00.	5 0.
124-48-1	CHLORODIBROMOMETHANE	ND	50 .
79-00-5	1,1,2-TRICHLORDETHANE	ND	50 .
71-43-2	BENZENE	110.	5 0.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	50 .
110-75-8	2-CHLORDETHYLVINYLETHER	ND	5 00.
75-25-2	BROMOFORM	ND	5 0.
119-78-6	2-HEXANONE	ND	3 00.
108-10-1	4-METHYL-2-PENTANONE	ND	3 00.
127-18-4	TETRACHLOROETHENE	ND	5 0.
108-88-3	TOLUENE	ND	5 0.

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1, A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 04/13/87 QCMS FILENAME: 5677V2 LEVEL: LOW MATRIX: WATER

DATE PREPARED: 04/15/87 DATE ANALYZED: 04/15/87

STANDARD ID: VOA457 INSTRUMENT ID: 5100

SAMPLE AMOUNT: 100UL

CAS #	COMPOUND	CONC:	UG/L(PPB)	DETECTION LIMIT
	ng 化性性 医性性 医性性 医性性 医性性 医性性 医性性 医性性 医性性 医性性		********	*********
108-90-7	CHLOROBENZENE		ND	5 0.
100-41-4	ETHYLBENZENE		ND	5 0.
100-42-5	STYRENE		ND	50 .
95-47-6	TOTAL XYLENES		ND	5 0.
108-41-8	M-CHLOROTOLUENE		ND	5 0.
541-73-1	1,3-DICHLOROBENZENE		ND	50
106-46-7	1,4-DICHLOROBENZENE		ND	5 0.
95-50-1	1,2-DICHLOROBENZENE		ND	50 .
120-82-1	1, 2, 4-TRICHLOROBENZENE		ND	50 .

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1, A

TENTATIVELY IDENTIFIED COMPOUNDS

FRACTION CONCENTRATION COMPOUND NAME UG/L(PPB)

1 NONE FOUND

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1.B

ANALYSIS TYPE: EPA METHOD 8240 (624)

DRGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 04/13/87 GCMS FILENAME: 5677V3

LEVEL: LOW MATRIX: WATER DATE PREPARED: 04/15/87 DATE ANALYZED: 04/15/87

STANDARD ID: VOA457 INSTRUMENT ID: 5100
SAMPLE AMOUNT: 100UL

				DETECTION
CAS #	COMPOUND	CONC:	UG/L(PPB)	LIMIT
######################################	****************			********
74-87-3	CHLOROMETHANE		ND	300 .
74-83-9	BROMOMETHANE		ND	300 .
75-01-4	VINYL CHLORIDE		ND	300 .
75-00-3	CHLOROETHANE		ND	3 00.
75-09-2	METHYLENE CHLORIDE		ND	5 00.
67-64-1	ACETONE		ND	5 00.
107-02-8	ACROLEIN		ND	5 00.
107-13-1	ACRYLONITRILE		ND	50 0.
75-15-0	CARBON DISULFIDE		ND	5 0.
75-35-4	1,1-DICHLOROETHENE		250 0.	50 .
75-34-3	1,1-DICHLOROETHANE		ND	50 .
156-60-5	TRANS-1, 2-DICHLOROETHENE		ND	50 .
109-99-9	TETRAHYDROFURAN		ND	5 0.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5 0.
76-13-1	FREON-TF		ND	5 0.
106-93-4	ETHYLENE DIBROMIDE		ND	50 .
123-91-1	1,4-DIOXANE		ND	5 0.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	50 .
67-66-3	CHLOROFORM		ND	5 0.
107-06-2	1,2-DICHLOROETHANE		ND	5 0.
78-93-3	2-BUTANONE		ND	50 0.
71-55-6	1,1,1-TRICHLORDETHANE		120.	5 0.
16-23-5	CARBON TETRACHLORIDE		ND	5 0.
108-05-4	VINYL ACETATE		ND	3 00.
75-27-4	BROMODICHLOROMETHANE		ND	50 .
79-34-5	1, 1, 2, 2-TETRACHLOROETHANE		ND	5 0.
78-87-5	1,2-DICHLOROPROPANE		ND	50 .
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	50 .
79-01-6	TRICHLOROETHENE		3 600.	50 .
124-48-1	CHLORODIBROMOMETHANE		ND	5 0.
79-00-5	1,1,2-TRICHLOROETHANE		ND	50 .
71-43-2	BENZENE		ND	50 .
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	5 0.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	5 00.
75-25-2	BROMOFORM		ND	50 .
119-78-6	2-HEXANONE		ND	300.
108-10-1	4-METHYL-2-PENTANONE		ND	30 0.
127-18-4	TETRACHLOROETHENE		ND	5 0.
108-88-3	TOLUENE		ND	5 0.

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1, B.

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED:

04/13/87

QCMS FILENAME:

567743

LEVEL:

LDW

MATRIX: 4.5

MATER

DATE PREPARED:

04/15/87

DATE ANALYZED:

04/15/87

STANDARD ID:

VDA457

INSTRUMENT ID:

5100

SAMPLE AMOUNT:

100UL

DETECTION

CAS #	COMPOUND	CONC:	UG/L(PPB)	LIMIT
			ND	50.
108-90-7	CHLOROBENZENE			
100-41-4	ETHYLBENZENE		ND	5 0.
100-42-5	STYRENE		ND	5 0.
95-47-6	TOTAL XYLENES		ND	5 0.
108-41-B	M-CHLOROTOLUENE		ND	5 0.
541-73-1	1,3-DICHLOROBENZENE		ND	50
106-46-7	1,4-DICHLOROBENZENE		ND	5 0.
95-50-1	1,2-DICHLOROBENZENE		ND	5 0.
120-82-1	1, 2, 4-TRICHLOROBENZENE		ND	5 0.

CLIENT: WOODWARD CLYDE

SAMPLE: MW-1, B

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/L(PPB)

1 NONE FOUND

CLIENT: WOODWARD CLYDE SAMPLE: TRIP BLANK

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 04/13/87 QCMS FILENAME: 5677V4
LEVEL: LOW MATRIX: WATER

DATE PREPARED: 04/15/87 DATE ANALYZED: 04/15/87 STANDARD ID: VDA457 INSTRUMENT ID: 5100

SAMPLE AMOUNT: 5. OML

				DETECTION
CAS #	COMPOUND	CONC:	UG/L(PPB)	LIMIT
	*************			*********
74-87-3	CHLOROMETHANE		ND	5 .
74-B3-9	BROMOMETHANE		ND	5 .
75-01-4	VINYL CHLORIDE		MD	5 .
75-00-3	CHLOROETHANE		ND	5 .
75-09-2	METHYLENE CHLORIDE		ND	10.
67-64-1	ACETONE		ND	10.
107-02-B	ACROLEIN		ND	10.
107-13-1	ACRYLONITRILE		ND	10.
75-15-0	CARBON DISULFIDE		ND	1.
75-35-4	1,1-DICHLORGETHENE		, ND	1.
75-34-3	1,1-DICHLOROETHANE		ND	1.
156-60-5	TRANS-1, 2-DICHLOROETHENE		ND	1.
109-99-9	TETRAHYDROFURAN		ND	1.
75-69-4	TRICHLOROFLUOROMETHANE		ND	1.
76-13-1	FREON-TF		ND	1.
106-93-4	ETHYLENE DIBROMIDE		ND	1.
123-91-1	1,4-DIOXANE		ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	1.
67-66-3	CHLOROFORM		ND	1.
107-06-2	1,2-DICHLOROETHANE		ND	. 1 .
78-93-3	2-BUTANONE		ND	10.
71-55-6	1, 1, 1-TRICHLOROETHANE		ND	1.
16-23-5	CARBON TETRACHLORIDE		ND	1.
108-05-4	VINYL ACETATE		ND	5 .
75-27-4	BROMODICHLOROMETHANE		ND	1.
79-34-5	1, 1, 2, 2-TETRACHLORDETHANE		ND	1.
78-87-5	1,2-DICHLOROPROPANE	•	ND	1.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE		ND	1.
79-01-6	TRICHLOROETHENE		ND	1.
124-48-1	CHLORODIBROMOMETHANE		ND	1.
79-00-5	1, 1, 2-TRICHLOROETHANE		ND	1.
71-43-2	BENZENE		ND	1.
10061-01-5	CIS-1, 3-DICHLOROPROPENE		ND	1.
110-75-8	2-CHLORDETHYLVINYLETHER		ND	10.
75-25-2	BROMOFORM		ND	1.
119-78-6	2-HEXANDNE		ND	5 .
108-10-1	4-METHYL-2-PENTANONE		ND	5 .
127-18-4	TETRACHLOROETHENE		ND	1.
108-88-3	TOLUENE		ND	1.

HOODWARD CLYDE CLIENT:

SAMPLE: TRIP BLANK

ANALYSIS TYPE: EPA METHOD 8240 (624)

DRGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 04/13/87

DATE RECEIVED: MATRIX: LOW LEVEL:

WATER 04/15/87 DATE ANALYZED:

567744

04/15/87 DATE PREPARED: INSTRUMENT ID: 5100 **VDA457** STANDARD ID:

5. OML SAMPLE AMOUNT:

CAS +	COMPOUND	CDNC:	UG/L(PPB)	DETECTION LIMIT
CHS W		*******	222222200.	4
	AND AND AND AND AND AND AND AND AND AND		ND	1.
1 08-9 0-7	CHLOROBENZENE		ND	1.
100-41-4	ETHYLBENZENE		ND	1.
100-42-5	STYRENE		ND	1.
95-47-6	TOTAL XYLENES		ND	1.
108-41-B	M-CHLOROTOLUENE		ND	1.
541-73-1	1.3-DICHLOROBENZENE		ND	1.
106-46-7	1,4-DICHLOROBENZENE		ND	1.
95-50-1 120-82-1	1, 2-DICHLOROBENZENE 1, 2, 4-TRICHLOROBENZENE		ND	1.

CLIENT: WOODWARD CLYDE

SAMPLE: TRIP BLANK

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/L(PPB)

NONE FOUND

CHAIN OF CUSTODY RECORD PAGE OF								
PROJECT NAME: Duglas - Porrance DATE 4/13/87								
P	PROJE	CT NAME:	1-100	3105 - 10rm	nnce		-(-1)	
	PROJE	CT NO.:	418	63B				
Sample Number	Location	Type of	Sample	Type of Container	Type	of Preservation	Acalmia	
Sample Number	Location	Material	Method	Type of Container	Temp	Chemical	Anaiysis	Required *
MW-1(41)A		11150	Birled	40 ml Viel	ind		824	10
· B				tone vial			824	
<u> </u>		ч	•	500 ml Aprile				
11 D		۰		500 ML Anber			जिसे ।	
i E		•	16	500 pl Amber			SAM	PLE)
4		٦	3	500 mldaba	J			
TMP Blank		- CC		40 ml Vial			82	40
		}						
		ŧ						
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	1	1			1			
Total Number of	Samples Sh	ipped: 1	Sampler	's Signature:	RA	المارمان المارمان	- 	
Relinquished By	> ()	1		Received By: Signature		11-101		/ Date
	nontice		,	Signature	augu	estell		1/13/21
Printed Name	Builder	JACO (<u>></u> /a	Printed Name Company	Ture	garat Falt	<u> </u>	Time
Reason			· · · · · · · · · · · · · · · · · · ·	Company	<u></u>			2:4
Relinquished By:				Received By:				Date
Signature				Signature				_/_/
Printed Name				Printed Name				Time
Company Reason				Company				
Relinquished By:				Received By:				Date
Signature			 	Signature				//_
Printed Name							<u> </u>	Time
Company				Company				
ReasonRelinquished By:				Received By:				Date
Signature					·			/ /_
Printed Name								Time
Company				Company				
Reason				<u> L</u>				
Special Shipment	/ mandling	/ Storage	-ednisausu	13.				
Note - This d	nes nat cor	nstitute auti	norization t	o proceed with analys	ije			

Woodward-Clyde Consultants

SHIPMENT NO .:_

November 11, 1987

WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Brian Jacobs

JOB NO. 7621



ANALYTICAL CHEMIST:

LABORATORY REPORT

Samples Received: Four (4) water samples in duplicate

Date Received: 11-2-87

Purchase Order No: Proj: 87418630-1000/Douglas

The samples were analyzed as follows:

Results <u>Analysis</u> Samples Analyzed

Volatile Organics Three waters Data Sheets by EPA 624

Fuel Hydrocarbons by Three waters Table I

modified EPA 8015

TABLE I

Parts Per Million

Sample No.	<u>Gasoline</u>	Diesel <u>Fuel</u>	Kerosene	Mineral Spirits
MW-2B	ND	ND	ND	ND
MW-3B	ND	ND	ND	ND
MW-4B	ND	ND	ND	ND
Detection Limit	t 2	2	2	2

ND - Not Detected

11-5-87 Date Analyzed:

Page 1 of 1

Michael Shelton Senior Chemist

D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-2A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/02/87 GCMS FILENAME: 7621V1 LEVEL: LOW WATER MATRIX: DATE PREPARED: 11/11/87 DATE ANALYZED: 11/11/87 STANDARD ID: **VOA608** INSTRUMENT ID: 5100

SAMPLE AMOUNT: 5ML

CAS #	COMPOUND	CONC:	UG/L(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	5.
74-83-9	BROMOMETHANE		ND	5.
75-01-4	VINYL CHLORIDE		ND	5.
75-00-3	CHLOROETHANE		ND	5.
75-09-2	METHYLENE CHLORIDE		ND	10.
67-64-1	ACETONE		ND	10.
107-02-8	ACROLEIN		ND	10.
107-13-1	ACRYLONITRILE		ND	10.
75-15-0	CARBON DISULFIDE		ND	1.
75-35-4	1,1-DICHLOROETHENE		5.	1.
75-34-3	1,1-DICHLOROETHANE		ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	1.
109-99-9	TETRAHYDROFURAN		ND	1.
75-69-4	TRICHLOROFLUOROMETHANE		ND	1.
76-13-1	FREON-TF		ND	1.
106-93-4	ETHYLENE DIBROMIDE		ND	1.
123-91-1	1,4-DIOXANE		ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	1.
67-66-3	CHLOROFORM		ND	1.
107-06-2	1,2-DICHLOROETHANE		ND	1.
78-93-3	2-BUTANONE		ND	10.
71-55-6	1,1,1-TRICHLOROETHANE		5.	1.
16-23-5	CARBON TETRACHLORIDE		ND	1.
108-05-4	VINYL ACETATE		ND	5.
75-27-4	BROMODICHLOROMETHANE		ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	1.
78-87-5	1,2-DICHLOROPROPANE		ND	1.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	1.
79-01-6	TRICHLOROETHENE	-	14.	1.
124-48-1	CHLORODIBROMOMETHANE		ND	1.
79-00-5	1,1,2-TRICHLOROETHANE		ND	1.
71-43-2	BENZENE		ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	10.
75-25-2	BROMOFORM		ND	1.
119-78-6	2-HEXANONE		ND	5.
108-10-1	4-METHYL-2-PENTANONE		ND	5.
127-18-4	TETRACHLOROETHENE		ND	1.
108-88-3	TOLUENE		6.	1.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-2A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/02/87 GCMS FILENAME: 7621V1 LEVEL: LOW MATRIX: WATER DATE PREPARED: 11/11/87 DATE ANALYZED: 11/11/87

STANDARD ID: VOA608 INSTRUMENT ID: 5100

SAMPLE AMOUNT: 5ML

CAS #	COMPOUND	CONC: UG/L(PPE	DETECTION) LIMIT
	n 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	NT	1.
108-90-7	CHLOROBENZENE	NI	
	ETHYLBENZENE	ni	1.
100-41-4	_	NI	1.
100-42-5	STYRENE	NI	_
95-47-6	TOTAL XYLENES		·
108-41-8	M-CHLOROTOLUENE	NI	1.
	1,3-DICHLOROBENZENE	NI	1.
541-73-1	1,3-DICHLOROBENZENE	NI NI	1.
106-46-7	1,4-DICHLOROBENZENE		
95-50-1	1,2-DICHLOROBENZENE	N:	٠. ٠.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-2A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME FRACTION CONCENTRATION UG/L(PPB)

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SITE: DOUGLE SAMPLE: MW-3A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/02/87 GCMS FILENAME: 7621V3
LEVEL: LOW MATRIX: WATER
DATE PREPARED: 11/11/87 DATE ANALYZED: 11/11/87
STANDARD ID: VOA608 INSTRUMENT ID: 5100

SAMPLE AMOUNT: 5UL

CAS #	COMPOUND	CONC:	UG/ML(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	5.
74-83-9	BROMOMETHANE		ND	5.
75-01-4	VINYL CHLORIDE		ND	5.
75-00-3	CHLOROETHANE		ND	5.
75-09-2	METHYLENE CHLORIDE		ND	10.
67-64-1	ACETONE		ND	10.
107-02-8	ACROLEIN		ND	10.
107-13-1	ACRYLONITRILE		ND	10.
75-15-0	CARBON DISULFIDE	•	ND	1.
75-35-4	1,1-DICHLOROETHENE		38.	1.
75-34-3	1,1-dichloroethane		ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	1.
109-99-9	TETRAHYDROFURAN		ND	1.
75-69-4	Trichlorofluoromethane		ND	1.
76-13-1	FREON-TF		ND	1.
106-93-4	ETHYLENE DIBROMIDE		ND	1.
123-91-1	1,4-DIOXANE		ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	1.
67-66-3	CHLOROFORM		ND	1.
107-06-2	1,2-DICHLOROETHANE		ND	1.
78-93-3	2-BUTANONE		ND	10.
71-55-6	1,1,1-TRICHLOROETHANE		110.	1.
16-23-5	CARBON TETRACHLORIDE	•	ND	1.
108-05-4	VINYL ACETATE		ND	5.
75-27-4	BROMODICHLOROMETHANE		ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	1.
78-87-5	1,2-DICHLOROPROPANE		ND	1.
10061-02-6			ND	1.
79-01-6	TRICHLOROETHENE		10.	1.
124-48-1	CHLORODIBROMOMETHANE		ND	1.
79-00-5	1,1,2-TRICHLOROETHANE		ND	1.
71-43-2	BENZENE		ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	10.
75-25-2	BROMOFORM		ND	1.
119-78-6	2-HEXANONE		ND	5.
108-10-1	4-methyl-2-pentanone		54.	5.
127-18-4	TETRACHLOROETHENE		ND	1.
108-88-3	TOLUENE		80.	1.

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CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/02/87 GCMS FILENAME: 7621V3
LEVEL: LOW MATRIX: WATER
DATE PREPARED: 11/11/87 DATE ANALYZED: 11/11/87
STANDARD ID: VOA608 INSTRUMENT ID: 5100

STANDARD ID: VOA608 SAMPLE AMOUNT: 5UL

CAS #	COMPOUND	CONC: UG/ML(1	DETECT: PPM) LIMIT	
			iD 1	_
108-90-7	CHLOROBENZENE		••	_
100-41-4	ETHYLBENZENE	1	ND 1	
100-42-5	STYRENE		ND 1	•
•		•	ND 1	
95-47-6	TOTAL XYLENES	•		-
108-41-8	M-CHLOROTOLUENE	1		• .
541-73-1	1,3-DICHLOROBENZENE		ND 1	. •
			ND 1	
106-46-7	1,4-DICHLOROBENZENE		-	
95-50-1	1,2-DICHLOROBENZENE		ND 1	. •

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/ML(PPM)

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-4A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/02/87 GCMS FILENAME: 7621V2
LEVEL: LOW MATRIX: WATER
DATE PREPARED: 11/11/87 DATE ANALYZED: 11/11/87
STANDARD ID: VOA608 INSTRUMENT ID: 5100

SAMPLE AMOUNT: 5ML

CAS #	COMPOUND	CONC:	UG/L(PPB)	DETECTION LIMIT
		******	********	:
74-87-3	CHLOROMETHANE		ND	5.
74-83-9	BROMOMETHANE		ND	5.
75-01-4	VINYL CHLORIDE		ND	5.
75-00-3	CHLOROETHANE		ND	5.
75-09-2	METHYLENE CHLORIDE		ND	10.
67-64-1	ACETONE		ND	10.
107-02-8	ACROLEIN		ИD	10.
107-13-1	ACRYLONITRILE		ND	10.
75-15-0	CARBON DISULFIDE		ND	1.
75-35-4	1,1-DICHLOROETHENE		360.	1.
75-34-3	1,1-DICHLOROETHANE		ND	1.
156-60-5	TRANS-1,2-DICHLOROETHENE		2.	1.
109-99-9	TETRAHYDROFURAN		ND	1.
75-69-4	TRICHLOROFLUOROMETHANE		ND	1.
76-13-1	FREON-TF		ND	1.
106-93-4	ETHYLENE DIBROMIDE		ND	1.
123-91-1	1,4-DIOXANE		ND	1.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	1.
67-66-3	CHLOROFORM		2.	1.
107-06-2	1,2-DICHLOROETHANE		ND	1.
78-93-3	2-BUTANONE		ND	10.
71-55-6	1,1,1-TRICHLOROETHANE		14.	1.
16-23-5	CARBON TETRACHLORIDE		ND	, 1.
108-05-4	VINYL ACETATE		ND	5.
75-27-4	BROMODICHLOROMETHANE		ND	1.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	1.
78-87-5	1,2-DICHLOROPROPANE		ND	1.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE		ND	1.
79-01-6	TRICHLOROETHENE		700.	1.
124-48-1	CHLORODIBROMOMETHANE		ND	1.
79-00-5	1,1,2-TRICHLOROETHANE		ND	
71-43-2	BENZENE		ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	1.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	10.
75-25-2	BROMOFORM		ND	1.
119-78-6	2-HEXANONE		ND	5.
108-10-1	4-METHYL-2-PENTANONE		ND	5.
127-18-4	TETRACHLOROETHENE		ND	1.
108-88-3	TOLUENE		ND	1.

WOODWARD-CLYDE CLIENT: DOUGLAS AIRCRAFT SITE:

SAMPLE: MW-4A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

7621V2 GCMS FILENAME: 11/02/87 DATE RECEIVED: WATER MATRIX: LOW LEVEL: 11/11/87 DATE ANALYZED: 11/11/87 DATE PREPARED: 5100 INSTRUMENT ID: **VOA608** STANDARD ID:

5ML SAMPLE AMOUNT:

	COMPOUND	CONC: UG/L(PPB	DETECTION) LIMIT
CAS #	1. 医胃中毒性 医多种性 医多种性 医克拉斯氏征 医克拉斯氏征 医克拉斯氏征 医克拉斯氏征 医皮肤炎症 医皮肤炎症 医皮肤炎症 医皮肤炎症 医皮肤炎 医皮肤炎 医皮肤炎 医皮肤炎 医皮肤炎 医皮肤炎 医皮肤炎 医皮肤炎	ND	1.
108-90-7	CHLOROBENZENE	ND	•
100-41-4	ETHYLBENZENE	NE	1.
100-42-5	STYRENE	NI	
95-47-6	TOTAL XYLENES M-CHLOROTOLUENE	ni	_
108-41-8	1,3-DICHLOROBENZENE	NI	_
541-73-1	1,4-DICHLOROBENZENE	NI	_
106-46-7 95-50-1	1,2-DICHLOROBENZENE	N	.

CLIENT: WOODWARD-CLYDE

SITE:

DOUGLAS AIRCRAFT

SAMPLE: MW-4A

TENTATIVELY IDENTIFIED COMPOUNDS

FRACTION CONCENTRATION COMPOUND NAME UG/L(PPB) 10. VOA 1 CIS-1,2-DICHLOROETHYLENE

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

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Sample Number	Location		Sample Method	Type of Container		of Preservation Chemical	Analysis R	equired *
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CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-1A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

776172 GCMS FILENAME: 11/13/87 DATE RECEIVED: WATER MATRIX: LOW LEVEL: DATE ANALYZED: 11/16/87 DATE PREPARED: 11/16/87 INSTRUMENT ID: 5101 V0A450 STANDARD ID:

SAMPLE AMOUNT: 250UL

0.45 #	COMPOUND		UG/L(PPB)	DETECTION LIMIT
CAS #	医动脉动脉性中心 医角性性性神经炎 计对比 化二甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基甲基	*******	*********	***********
		4		
	·		ND	100.
74-87-3	CHLOROMETHANE		ND	100.
74-83-9	BROMOMETHANE		ND	100.
75-01-4	VINYL CHLORIDE		ND	100.
7 5- 00-3	CHLOROETHANE		ND	200.
75-0 9 -2	METHYLENE CHLORIDE		ND	200.
67-64-1	ACETONE		ND	200.
107-02-8	ACROLEIN		ND	200.
107-13-1	ACRYLONITRILE		ND	20.
75-15-0	CARBON DISULFIDE		3000.	20.
75-35-4	1,1-DICHLOROETHENE		23.	20.
75-34-3	1, 1-DICHLOROETHANE		75. ·	20.
156-60-5	TRANS-1, 2-DICHLORDETHENE		ND ND	20.
109-99-9	TETRAHYDROFURAN		ND	20.
75-69-4	TRICHLOROFLUOROMETHANE		ND	20.
76-13-1	FREON-TF		מא מא	20.
106-93-4	ETHYLENE DIBROMIDE		ND	20.
123-91-1	1,4-DIOXANE		ND ND	20. 20.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE			20. 20.
67-66-3	CHLOROFORM		39.	20. 20.
107-06-2	1,2-DICHLOROETHANE		ND	20. 200.
78-93-3	2-BUTANONE		ND	200. 20.
71-55-6	1,1,1-TRICHLORGETHANE		160.	20. 20.
16-23-5	CARBON TETRACHLORIDE		ND	100.
108-05-4	VINYL ACETATE		МD	20.
75-27-4	BROMODICHLOROMETHANE		ND	20. 20.
79-34-5	1, 1, 2, 2-TETRACHLORGETHANE		ND	20. 20.
78-87-5	1,2-DICHLOROPROPANE		ND	20. 20.
10061-02-6	TRANS-1, 3-DICHLOROPROPENE		ND	
79-01-6	TRICHLOROETHENE		5200.	20.
124-48-1	DIBROMOCHLOROMETHANE		ND	20.
79-00-5	1, 1, 2-TRICHLORDETHANE		ND	20.
71-43-2	BENZENE		160.	20.
10061-01-5	CIS-1, 3-DICHLOROPROPENE		ND	20.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	200.
75-25-2	BROMOFORM		ND	20.
119-78-6	2-HEXANONE		ND	100.
108-10-1	4-METHYL-2-PENTANONE		ND	100.
127-18-4	TETRACHLOROETHENE		ND	20.
108-88-3	TOLUENE		ND	20.
100-00-3				

5101

WEST COAST ANALYTICAL SERVICE, INC.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-1A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/13/87 GCMS FILENAME: 7761V2
LEVEL: LOW MATRIX: WATER
DATE PREPARED: 11/16/87 DATE ANALYZED: 11/16/87

STANDARD ID: VDA450 INSTRUMENT ID:

SAMPLE AMOUNT: 250UL

CAS #	COMPOUND	CONC: 4	JG/L(PPB)	DETECTION LIMIT
108~90~7	CHLOROBENZENE		ND	20.
100-41-4	ETHYLBENZENE		ND	20.
100-42-5	STYRENE		ND	20.
75-47-6	TOTAL XYLENES		ND	20.
108-41-8	M-CHLOROTOLUENE		ND	20.
95-50-1	1, 2-DICHLORDBENZENE		ND	20.
541-73-1	1,3-DICHLOROBENZENE		ND	20.
106-46-7	1,4-DICHLOROBENZENE		ND	20.

CLIENT: WOODWARD-CLYDE

SITE:

DOUGLAS AIRCRAFT

SAMPLE: WCC-1A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/L(PPB)

1 CIS-1, 2-DICHLORGETHYLENE

VOA

200.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-2A

ANALYSIS TYPE: EPA METHOD 8240 (624)

DRGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/13/87

GCMS FILENAME:

776144

LEVEL:

LOW

MATRIX:

WATER

DATE PREPARED:

11/16/87

DATE ANALYZED:

11/16/87

STANDARD ID:

V0A450

INSTRUMENT ID:

5101

SAMPLE AMOUNT:

5ML

DETECTION

CAS #	COMPOUND	CONC: UG/L(PPB)	LIMIT
美国主要领象品的包含 。	B		
74-87-3	CHLOROMETHANE	ND	5 .
74-83-9	BROMOMETHANE	ND	5 .
75-01-4	VINYL CHLORIDE	ND	5 .
75-00-3	CHLORDETHANE	ND	5
75-09-2	METHYLENE CHLORIDE	ND	10.
67-64-1	ACETONE	ND	10.
107-02-8	ACROLEIN	ND	10.
107-13-1	ACRYLONITRILE	ND	10.
. 75–15–0	CARBON DISULFIDE	ND	1.
75-35-4	1.1-DICHLOROETHENE	2.	1.
75-34-3	1,1-DICHLOROETHANE	ND	1.
156-60-5	TRANS-1, 2-DICHLOROETHENE	ND	1.
109-99-9	TETRAHYDROFURAN	ND	1.
75-69-4	TRICHLOROFLUOROMETHANE	ND	1.
76-13-1	FREON-TF	ND	1.
106-93-4	ETHYLENE DIBROMIDE	ND	1.
123-91-1	1,4-DIOXANE	ND	1.
96-12-B	1,2-DIBROMO-3-CHLOROPROPANE	ND	1.
67-66-3	CHLOROFORM	ND	1.
107-06-2	1.2-DICHLOROETHANE	ND	1.
78-93-3	2-BUTANONE	ND	10.
71-55-6	1, 1, 1-TRICHLORGETHANE	ND	1.
16-23-5	CARBON TETRACHLORIDE	ND	1.
108-05-4	VINYL ACETATE	ND	5 .
75-27-4	BROMODICHLOROMETHANE	ND	1.
79-34-5	1, 1, 2, 2-TETRACHLOROETHANE	ND	1.
78-87-5	1,2-DICHLOROPROPANE	ND	1.
10061-02-6	TRANS-1.3-DICHLOROPROPENE	ND	1.
79-01-6	TRICHLOROETHENE	4.	1.
124-48-1	DIBROMOCHLOROMETHANE	ND	1.
79-00-5	1.1.2-TRICHLOROETHANE	ND	1.
71-43-2	BENZENE	ND	1.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	1.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	10.
75-25-2	BROMOFORM	ND	1.
119-78-6	2-HEXANDNE	ND	5.
108-10-1	4-METHYL-2-PENTANONE	ND	5.
127-18-4	TETRACHLOROETHENE	ND	1.
108-88-3	TOLUENE	1	1.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-2A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 776174 11/13/87 DATE RECEIVED: WATER MATRIX: LOW LEVEL: DATE ANALYZED: 11/16/87 11/16/87 DATE PREPARED: INSTRUMENT ID: 5101 V0A450 STANDARD ID:

SAMPLE AMOUNT: 5ML

CAS #	COMPOUND	CONC:	UG/L(PPB)	DETECTION LIMIT
108-90-7 100-41-4 100-42-5 95-47-6 108-41-8 95-50-1 541-73-1 106-46-7	CHLOROBENZENE ETHYLBENZENE STYRENE STYRENE TOTAL XYLENES M-CHLOROTOLUENE 1, 2-DICHLOROBENZENE 1, 3-DICHLOROBENZENE 1, 4-DICHLOROBENZENE		20 20 20 20 20 20 20 20 20 20 20	1. 1. 1. 1. 1.

SITE:

CLIENT: WOODWARD-CLYDE

DOUGLAS AIRCRAFT

SAMPLE: WCC-2A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/L(PPB)

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-3A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

776176 GCMS FILENAME: 11/13/87 DATE RECEIVED: WATER MATRIX: MEDIUM LEVEL: 11/17/87 DATE ANALYZED: 11/17/87 DATE PREPARED: 5101 INSTRUMENT ID: V0A451 STANDARD ID:

SAMPLE AMOUNT: SUL

	CONC	LIG/ML (PPM)	DETECTION
		**************************************	20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
大学技术共享完全生活之类型的主义。			
CHLOROMETHANE		ND ND	5. 5.
			5.
			5 .
CHLOROETHANE			10.
			10.
ACETONE			10.
ACROLEIN			10.
ACRYLONITRILE			1.
CARBON DISULFIDE		•	1.
1,1-DICHLOROETHENE			1.
1,1-DICHLOROETHANE		-	1.
	•	— •	1.
TETRAHYDROFURAN			1.
TRICHLOROFLUOROMETHANE			1.
FREON-TF			1.
ETHYLENE DIBROMIDE		• • • •	1.
1.4-DIDXANE		•	1.
1, 2-DIBROMO-3-CHLOROPROPANE		·	1.
CHLOROFORM		•	1.
1, 2-DICHLORGETHANE		_ , ,,,	- -
2-BUTANONE		-	10.
1, 1, 1-TRICHLORDETHANE		= '	1.
CARBON TETRACHLORIDE			1.
		• • • •	5 .
BROMODICHLOROMETHANE			1.
1, 1, 2, 2-TETRACHLOROETHANE			1.
1.2-DICHLOROPROPANE			1.
TRANS-1, 3-DICHLOROPROPENE		• • •	1.
TRICHLORDETHENE		•	1.
DIBROMOCHLOROMETHANE		• • • •	1.
1. 1. 2-TRICHLORGETHANE			1.
BENZENE		• • • •	1.
CIS-1, 3-DICHLOROPROPENE		•	1.
2-CHLORDETHYLVINYL ETHER			10.
		•	1.
			5 .
4-METHYL-2-PENTANONE		• • •	• 5 .
TETRACHLOROETHENE			1.
		140 _. .	1.
	CHLOROMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETONE ACROLEIN ACRYLONITRILE CARBON DISULFIDE 1, 1-DICHLOROETHENE 1, 1-DICHLOROETHANE TRANS-1, 2-DICHLOROETHENE TETRAHYDROFURAN TRICHLOROFLUOROMETHANE FREDN-TF ETHYLENE DIBROMIDE 1, 4-DIDXANE 1, 2-DIBROMO-3-CHLOROPROPANE	CHLOROMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACETONE ACROLEIN ACRYLONITRILE CARBON DISULFIDE 1, 1-DICHLOROETHENE 1, 1-DICHLOROETHANE TRANS-1, 2-DICHLOROETHENE TETRAHYDROFURAN TRICHLOROFLUOROMETHANE FREON-TF ETHYLENE DIBROMIDE 1, 4-DIOXANE 1, 2-DIGHLOROETHANE CHLOROFORM 1, 2-DIGHLOROETHANE 2-BUTANONE 1, 1, 1-TRICHLOROETHANE CARBON TETRACHLORIDE VINYL ACETATE BROMODICHLOROMETHANE 1, 1, 2, 2-TETRACHLOROETHANE 1, 2, 2-TETRACHLOROETHANE 1, 1, 2-TRICHLOROETHANE 2-BUZENE CIS-1, 3-DICHLOROPROPENE CIS-1, 3-DICHLOROPROPENE 2-CHLOROETHYLVINYL ETHER BROMOFORM 2-HEXANONE 4-METHYL-2-PENTANONE TETRACHLOROETHENE	CHLOROMETHANE BROMOMETHANE BROMOMETHANE VINYL CHLORIDE CHLOROETHANE METHYLENE CHLORIDE ACCTONE ACROLEIN ACRYLONITRILE CARBON DISULFIDE 1, 1-DICHLOROETHANE 1, 1-DICHLOROETHANE TRANS-1, 2-DICHLOROETHENE TETRAHYDROFURAN TRICHLOROFTHANE 1, 2-DIBROMIDE 1, 4-DIDXANE 1, 2-DIBROMO-3-CHLOROPROPANE CHLOROFORM 1, 2-DIGHLOROETHANE 1, 1-TRICHLOROETHANE 1, 1-TRICHLOROETHANE 1, 1, 1-TRICHLOROETHANE 1, 2-DICHLOROETHANE 1, 1, 1-TRICHLOROETHANE 1, 1, 1-TRICHLOROETHANE 1, 1, 1-TRICHLOROETHANE 1, 1, 1-TRICHLOROETHANE 1, 1, 2-TETRACHLORIDE VINYL ACETATE BROMODICHLOROMETHANE 1, 2-DICHLOROPROPANE TRANS-1, 3-DICHLOROPROPENE TRANS-1, 3-DICHLOROPROPENE TRICHLOROETHENE DIBROMOCHLOROMETHANE 1, 1, 2-TRICHLOROETHANE ND ND ND ND ND ND ND ND ND ND ND ND ND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-3A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 11/13/87 GCMS FILENAME: 776176 LEVEL: MEDIUM MATRIX: WATER DATE PREPARED: 11/17/87 DATE ANALYZED: 11/17/87 VDA451 INSTRUMENT ID: 5101 STANDARD ID:

SAMPLE AMOUNT: 5UL

CAS #	COMPOUND	CONC:	UG/ML(PPM)	DETECTION LIMIT
108~90-7	CHLOROBENZENE		ND	1.
100-41-4	ETHYLBENZENE		ND	1.
100-42-5	STYRENE		ND	1.
95-47-6	TOTAL XYLENES		ND	1.
108-41-8	M-CHLOROTOLUENE		ND	1.
95-50-1	1,2-DICHLOROBENZENE		ND	1.
541-73-1	1,3-DICHLOROBENZENE		ND	1.
106-46-7	1,4-DICHLOROBENZENE		ND	1.

CLIENT: WOODWARD-CLYDE

SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-3A

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/ML(PPM)

1 NONE FOUND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT SAMPLE: WCC-4A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

11/13/87 GCMS FILENAME: 7761VB DATE RECEIVED: LEVEL: LOW MATRIX: WATER 11/17/87 DATE PREPARED: DATE ANALYZED: 11/17/87 STANDARD ID: VDA451 INSTRUMENT ID: 5101

SAMPLE AMOUNT: 500UL

CAS #	COMPOUND	 UG/L(PPB)	DETECTION LIMIT
44 484 242 422 4		******	
74-87-3	CHLOROMETHANE	MD	50 .
74-83-9	BROMOMETHANE	ND	50 .
75-01-4	VINYL CHLORIDE	ND	50 .
75-00-3	CHLORDETHANE	ND	50.
75-09-2	METHYLENE CHLORIDE	ND	100.
67-64-1	ACETONE	ND	100.
107-02-8	ACROLEIN	ND	100.
107-13-1	ACRYLONITRILE	ND ND	100.
75-15-0	CARBON DISULFIDE	ND	10.
75-35-4	1,1-DICHLOROETHENE	1200.	10.
75-34-3	1.1-DICHLORDETHANE	ND	10.
156-60-5	TRANS-1, 2-DICHLORDETHENE	ND	10.
109-99-9	TETRAHYDROFURAN	ND	10.
75-69-4	TRICHLOROFLUOROMETHANE	ND	10.
76-13-1	FREON-TF	ND	10.
106-93-4	ETHYLENE DIBROMIDE	ND	10.
123-91-1	1.4-DIOXANE	ND	10.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ND	10.
67-66-3	CHLORDFORM	ND	10.
107-06-2	1,2-DICHLOROETHANE	ND	10.
78 - 93-3	2-BUTANONE	ND	100.
71-55-6	1,1,1-TRICHLOROETHANE	35.	10.
14-23-5	CARBON TETRACHLORIDE	ND	10.
108-05-4	VINYL ACETATE	ND	50 .
75-27-4	BROMODICHLOROMETHANE	ND	10.
79-34-5	1, 1, 2, 2-TETRACHLOROETHANE	ND	10.
78-87-5	1,2-DICHLOROPROPANE	ND	10.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	10.
79-01-6	TRICHLOROETHENE	690 .	10.
124-48-1	DIBROMOCHLOROMETHANE	ND	10.
79-00-5	1, 1, 2-TRICHLOROETHANE	ND	10.
71-43-2	BENZENE	ND	10.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	· 10.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	100.
75-25-2	BROMOFORM	ND	10.
119-78-6	2-HEXANONE	ND	50 .
108-10-1	4-METHYL-2-PENTANONE	ND	50 .
127-18-4	TETRACHLOROETHENE	ND	10.
108-88-3	TOLUENE	ND	10.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: WCC-4A

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

OCMS FILENAME: 776148 DATE RECEIVED: 11/13/87 MATRIX: WATER LEVEL: LOW DATE ANALYZED: 11/17/87 DATE PREPARED: 11/17/87 5101 V0A451 INSTRUMENT ID: STANDARD ID:

SAMPLE AMOUNT: 500UL

CAS #	COMPOUND	CONC:	UG/L(PPB)	DETECTION LIMIT
	- 26-2 - 25-25-5-4-6-5-4-6-5-4-6-5-4-6-5-4-6-5-4-6-6-6-6	30000000000000000000000000000000000000	*=======	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)
108-90-7	CHLOROBENZENE		ND	10.
100-41-4	ETHYLBÈNZENE		ND	10.
100-42-5	STYRENE		ND	10.
95-47-6	TOTAL XYLENES		ND	10.
108-41-B	M-CHLOROTOLUENE		ND	10.
95-50-1	1,2-DICHLOROBENZENE		ND	10.
541-73-1	1,3-DICHLOROBENZENE		ND	10.
106-46-7	1,4-DICHLOROBENZENE		ND	10.

CLIENT: WOODWARD-CLYDE

SITE:

DOUGLAS AIRCRAFT

SAMPLE: WCC-4A

TENTATIVELY IDENTIFIED COMPOUNDS

Call Carries (Carries Carries
COMPOUND NAME

FRACTION CONCENTRATION

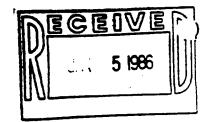
UC/L(PPB)

1 NONE FOUND

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

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Sample Number	Location	Type of Material	Sample Method	Type of Container	Temp	of Preservation Chemical		Required *
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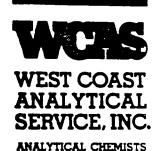


December 31, 1986

WOODWARD-CLYDE 203 No. Golden Circle Drive Santa Ana, CA 92705

Attn: Kevin Gibson

JOB NO. 4932



LABORATORY REPORT

Samples: Two (2) soil samples

Date Received: 12-29-86

Purchase Order No: Project 41863B

The samples were analyzed for total petroleum hydrocarbon content using EPA method 418.1. The results are listed below:

Parts Per Million

Sample No. Total Petroleum Hydrocarbons

B2-2-3 at 5' 5000 B2-7-3 at 30' 6000 Detection Limit 10

Date Analyzed: 12-30-86

Page 1 of 1

Isabella Gundran Chemist D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

		Woo	dward-C	Hyde Consulta	ants (SHIPMI	ENT NO.:
	-	C	HAIN OF	CUSTODY RECO	RD	PAGE_	
		T NAME:	Dough	41963B	18	CG DATE.	12 1291 84
Sample Number	Location	Type of Material	Sample Method	Type of Container	Type Temp	of Preservation Chemical	Analysis Required*
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B2 6-4	25						Hou
B2 7-4	30'	1					HUD #
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Time

Date

Time

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

1

		T NAME:,	1)00g/f		(070)		10187	
Sample Number	Location		Sample Method	Type of Container	Type Temp	of Preservation Chemical	Analysis	Required *
1W-3-1-3		Coil	rms	GLOS Tupe	Tein	NOUL	1100)
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JAN 1 2 1996

January 9, 1987

WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Kevin Gibson

JOB NO. 4968

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LABORATORY REPORT

Samples: Nineteen (19) soil samples

Date Received: 1-6-87 Purchase Order No: 41863B

Ten (10) samples were analyzed for total petroleum hydrocarbons by EPA method 418.1. The results are reported below:

Parts Per Million

Sample.No.	Total Petroleum	Hydrocarbons
2-7-4	14000	
2-8-4	2000	
2-9-4	2000	
2-10-4	19000	
3-1-4	2900	
3-2-4	27	
3-3-4	1200	
3-4-4	4400	
3-5-3	13000	
3-6-3	4100	
Detection Limit	10	

Date Extracted: 1-8-87
Date Analyzed: 1-8-87

Page 1 of 1

Isabelle Gundran
Chemist.

D.J. Northington, Ph.D. Technical Director

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO.:_____

PAGE_____OF_____

DATE 1 16 1 87

	PROJE	CT NO.:	41	8630			#496	8
Sample Number	Location	Type of Material	Sample Method	Type of Container	Type of Temp	of Preservation Chemical	Analysis	Required *
2-7-3	B-2	5016		BARSTINE	15%		HoL	5
2-7-4	,						EP	4. 4/8.1
2 - 3 - 3		7					Ato	ر م
2-8-4							419.1	TPH
2-9-3	17						H	<u> </u>
2-9-4.							418.1	TPAC
2-10-4	1						4/8,/	TPHC
3-1-3	B-3						, since	•
3-4-4								TPMC
3-2-3							1404	
3-2-4							418.1	TPHE
3-3-3		1 1					140	LP_
3-3-4							418.1	TPHE
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3-4-4	1			7			418.	TPHC
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3-6-3				, ,		11	الريخ المنسأل	TPNL
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Special Shipment / Handling / Storage Requirements:

LA/OR-0183-42

^{*} Note — This does not constitute authorization to proceed with analysis

June 5, 1987

WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Allistaire Callendar

JOB NO. 6039

JUN 0 8 1287 WEST COAST WCC-SANIA ANALYTICAL SERVICE, INC

ANALYTICAL CHEMISTS

LABORATORY REPORT

Samples: Seventeen (17) soil samples

Date Received: 5-27-87
Purchase Order No: 41863B

Nine (9) soil samples were analyzed for total petroleum hydrocarbon content using EPA Method 418.1. The results are on Table I.

Table I

Parts Per Million

Sample No.	Total Petroleum Hydrocarbon
B-4-1-2	ND
B-4-2-2	15000
B-4-3-2	44000
B-4-4-2	8200
B-4-5-2	28000
B-4-6-2	6000
B-4-7-2	1500
B-4-9-2	16000
	ND
B-4-10-2 Detection Limit:	10

ND - Not Detected

Date Analyzed: 6-4-87

Page 1 of 1

Isabelle Gundran Analytical Chemist D.J. Northington, Ph.D. Technical Director

		•	_					Consult					MENT NO.	
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Sample Number	Loc	ation		ype of	_		Type o	f Container			of Prese		Analysi	s Required*
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Special Shipment / Handling / Storage Requirements:

* Note — This does not constitute authorization to proceed with analysis

LA OR-0183-421

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 08/24/87 GCMS FILENAME: 6926V1
LEVEL: LOW MATRIX: SOIL
DATE PREPARED: 09/01/87 DATE ANALYZED: 09/01/87
STANDARD ID: VOA397 INSTRUMENT ID: 5101

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	conc:	UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	30.
74-83-9	BROMOMETHANE		ND	30.
75-01-4	VINYL CHLORIDE		ND	30.
75-00-3	CHLOROETHANE		ND	30.
75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		N D	50.
107-02-8	ACROLEIN		ND	50.
107-13-1	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ND	5.
75-35-4	1,1-DICHLOROETHENE		18.	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		ND	5.
123-91-1	1.4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
67-66-3	CHLOROFORM		ND	5.
107-06-2	1,2-DICHLOROETHANE		ND	5.
78-93-3	2-BUTANONE		ND	50.
71-55-6	1,1,1-TRICHLOROETHANE		570.	5.
16-23-5	CARBON TETRACHLORIDE		ND	5.
108-05-4	VINYL ACETATE		ND	30.
75-27-4	BROMODICHLOROMETHANE	•	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6	· · · · · · · · · · · · · · · · · · ·		ND	5.
79-01-6	TRICHLOROETHENE		ND	. 5 .
124-48-1	DIBROMOCHLOROMETHANE		ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND	5.
10061-01-5			ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	50.
75-25-2	BROMOFORM		ND	5.
119-78-6	2-HEXANONE		ND	30.
108-10-1	4-METHYL-2-PENTANONE		ND	30.
127-18-4	TETRACHLOROETHENE		ND	5.
108-88-3	TOLUENE		56.	5.
700-00-2				- ·

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V1 DATE RECEIVED: 08/24/87 SOIL MATRIX: LOW LEVEL: 09/01/87 DATE ANALYZED: DATE PREPARED: 09/01/87 5101 INSTRUMENT ID: **VOA397** STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC: UG/KG(PPB	DETECTION) LIMIT
********	医多类性医多性医多性医胃医生性性 医克拉特氏 计电话 医克拉特氏征		
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	11.	5.
100-42-5	STYRENE	ND	5.
	TOTAL XYLENES	110.	5.
95-47-6	_	ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE		
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1.4-DICHLOROBENZENE	ND	5.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT SAMPLE: 15TB-3-3

TENTATIVELY IDENTIFIED COMPOUNDS

FRACTION CONCENTRATION COMPOUND NAME UG/KG(PPB) 300. VOA 1 CHLORINATED HYDROCARBONS

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-4-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V7 DATE RECEIVED: 08/24/87 SOIL MATRIX: MEDIUM LEVEL: DATE ANALYZED: 09/01/87 09/01/87 DATE PREPARED: INSTRUMENT ID: 5101 VOA397 STANDARD ID:

SAMPLE AMOUNT: 1.0G:1ML,200UL:1ML,5

CAS #	COMPOUND	CONC:	UG/G(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	30.
74-83-9	BROMOMETHANE		ND	30.
75-01-4	VINYL CHLORIDE		ND	30.
75-00-3	CHLOROETHANE		ND	30.
75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		ND	50.
107-02-8	ACROLEIN		ND	50.
107-13-1	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ND	5.
75-35-4	1,1-DICHLOROETHENE		ND	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		ND	5.
123-91-1	1,4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
67-66-3	CHLOROFORM		ND	5.
107-06-2	1,2-DICHLOROETHANE		ND	5.
78-93-3	2-BUTANONE		160.	50.
71-55-6	1,1,1-TRICHLOROETHANE		27.	5.
16-23-5	CARBON TETRACHLORIDE		ND	5.
108-05-4	VINYL ACETATE		ND	30.
75-27-4	BROMODICHLOROMETHANE		ND	5. 5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	5.
79-01-6	TRICHLOROETHENE		10.	5. 5.
124-48-1	DIBROMOCHLOROMETHANE		ND ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND ND	50.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND ND	5.
75-25-2	BROMOFORM		ND ND	30.
119-78-6	2-HEXANONE		ND ND	30.
108-10-1	4-METHYL-2-PENTANONE		ND ND	5.
127-18-4	TETRACHLOROETHENE		870.	5.
108-88-3	TOLUENE		6/0.	

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-4-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 08/24/87 GCMS FILENAME: 6926V7
LEVEL: MEDIUM MATRIX: SOIL
DATE PREPARED: 09/01/87 DATE ANALYZED: 09/01/87

STANDARD ID: VOA397 INSTRUMENT ID: 5101

SAMPLE AMOUNT: 1.0G:1ML,200UL:1ML,5

CAS #	COMPOUND	CONC: UG/G(PPM)	DETECTION LIMIT
第中央工工工工工工工			5.
108-90-7	CHLOROBENZENE	ND	· · · · · · · · · · · · · · · · · · ·
100-41-4	ETHYLBENZENE	41.	5.
100-42-5	STYRENE	ND	5.
	TOTAL XYLENES	460.	5.
95-47-6		ND	5.
108-41-8	M-CHLOROTOLUENE	ND	5.
95-50-1	1,2-DICHLOROBENZENE		
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

CLIENT: WOODWARD-CLYDE

SITE: DOUGLAS AIRCRAFT 15TB-4-3

TENTATIVELY IDENTIFIED COMPOUNDS

FRACTION CONCENTRATION COMPOUND NAME UG/G(PPM)

1 NONE FOUND

VOA

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-5-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V8 08/24/87 DATE RECEIVED: SOIL MEDIUM MATRIX: LEVEL: 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: INSTRUMENT ID: 5101 STANDARD ID: **VOA397**

SAMPLE AMOUNT: 1.0G:1ML,100UL:1ML,5

CAS #	COMPOUND	CONC:	UG/G(PPM)	DETECTION LIMIT
***********	CHLOROMETHANE	*****	eseseseses ND	50.
74-87-3	BROMOMETHANE		ND	50.
74-83-9 75-01-4	VINYL CHLORIDE		ND	50.
75-01-4 75-00-3	CHLOROETHANE		ND	50.
75-00-3 75-09-2	METHYLENE CHLORIDE		ND	100.
67-64-1	ACETONE		ND	100.
107-02-8	ACROLEIN		ND	100.
107-13-1	ACRYLONITRILE		ND	100.
75-15-0	CARBON DISULFIDE		ND	10.
75-15-0 75-35-4	1.1-DICHLOROETHENE		ND	10.
75-35-4 75-34-3	1,1-DICHLOROETHANE		ND	10.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	10.
109-99-9	TETRAHYDROFURAN		ND	10.
75-69-4	TRICHLOROFLUOROMETHANE		ND	10.
76-13-1	FREON-TF		ND	10.
106-93-4	ETHYLENE DIBROMIDE		ND	10.
123-91-1	1,4-DIOXANE		ND	10.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	10.
67-66-3	CHLOROFORM		ND	10.
107-06-2	1,2-DICHLOROETHANE		ND	10.
78-93-3	2-BUTANONE		1800.	100.
71-55-6	1,1,1-TRICHLOROETHANE		38.	10.
16-23-5	CARBON TETRACHLORIDE		ND	10.
108-05-4	VINYL ACETATE		ND	50.
75-27-4	BROMODICHLOROMETHANE		ND	10.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	10.
79-34-5 78-87-5	1,2-DICHLOROPROPANE		ND	10.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	10.
79-01-6	TRICHLOROETHENE		94.	10.
	DIBROMOCHLOROMETHANE		ND	10.
124-48-1 79-00-5	1,1,2-TRICHLOROETHANE		ND	10.
71-43-2	BENZENE		ND	10.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	10.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	100.
 -	BROMOFORM		ND	10.
75-25-2 119-78-6	2-HEXANONE		ND	50.
108-10-1	4-METHYL-2-PENTANONE		ND	50.
127-18-4	TETRACHLOROETHENE		ND	10.
	TOLUENE		6300.	10.
108-88-3	TOHORNE			

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-5-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

6926V8 GCMS FILENAME: 08/24/87 DATE RECEIVED: SOIL MATRIX: LEVEL: MEDIUM 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: 5101 INSTRUMENT ID: VOA397 STANDARD ID:

SAMPLE AMOUNT: 1.0G:1ML,100UL:1ML,5

CAS #	COMPOUND	CONC: UG/G(PP	DETECTION M) LIMIT
********	B. 新国中央市场中央市场中央市场市场中央市场中央市场市场市场市场市场市场市场市场市场市场		
108-90-7	CHLOROBENZENE	•	D 10.
100-41-4	ETHYLBENZENE	180.	10.
		N	D 10.
100-42-5	STYRENE	1300.	10.
95-47-6	TOTAL XYLENES		ID 10.
108-41-8	M-CHLOROTOLUENE	<u> </u>	
95-50-1	1,2-DICHLOROBENZENE	1	ID 10.
541-73-1	1,3-DICHLOROBENZENE	1	ID 10.
= -	1.4-DICHLOROBENZENE	1	ID 10.
106-46-7	1.4-DICHLORUBENZENE	_	-

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 15TB-5-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME FRACTION CONCENTRATION UG/G(PPM)

1 NONE FOUND

VOA

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-2-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

6926V2 GCMS FILENAME: DATE RECEIVED: 08/24/87 SOIL MATRIX: LOW LEVEL: 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: 5101 INSTRUMENT ID: **VOA397** STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC:	UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	30.
74-83-9	BROMOMETHANE		ND	30.
75-01-4	VINYL CHLORIDE		ND	30.
75-00-3	CHLOROETHANE		ND	30.
75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		ND	50.
107-02-8	ACROLEIN		ND	50.
107-13-1	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ND	5.
75-35-4	1,1-DICHLOROETHENE		ND	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5. 5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5. 5.
76-13-1	FREON-TF		ND	5. 5.
106-93-4	ETHYLENE DIBROMIDE		ND	5.
123-91-1	1,4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5. 5.
67-66-3 .	CHLOROFORM		ND	5.
107-06-2	1,2-DICHLOROETHANE		ND	50.
78-93-3	2-BUTANONE		ND	50. 5.
71-55-6	1,1,1-TRICHLOROETHANE		ND	5.
16-23-5	CARBON TETRACHLORIDE		ND ND	30.
108-05-4	VINYL ACETATE		ND ND	5.
75-27-4	BROMODICHLOROMETHANE		ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6			ND	5.
79-01-6	TRICHLOROETHENE		ND	5.
124-48-1	DIBROMOCHLOROMETHANE		ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		. ND	50.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	5.
75-25-2	BROMOFORM		ND	30.
119-78-6	2-HEXANONE		ND	30.
108-10-1	4-METHYL-2-PENTANONE		ND	_
127-18-4	TETRACHLOROETHENE		ND	_
108-88-3	TOLUENE		3.2	

CLIENT: WOODWARD-CLYDE DOUGLAS AIRCRAFT SITE:

17TB-2-3 SAMPLE:

106-46-7

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V2 08/24/87 DATE RECEIVED: SOIL MATRIX: LOW LEVEL: DATE ANALYZED: 09/01/87 DATE PREPARED: 09/01/87 INSTRUMENT ID: 5101

1,4-DICHLOROBENZENE

STANDARD ID: **VOA397** 1.0G SAMPLE AMOUNT:

DETECTION LIMIT CONC: UG/KG(PPB) COMPOUND CAS # 5. ND CHLOROBENZENE 108-90-7 5. ND **ETHYLBENZENE** 100-41-4 5. ND STYRENE 100-42-5 5: ND TOTAL XYLENES 95-47-6 5. ND M-CHLOROTOLUENE 108-41-8 5. ND 1,2-DICHLOROBENZENE 95-50-1 ND 5. 1,3-DICHLOROBENZENE 541-73-1 5. ND

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-2-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME FRACTION CONCENTRATION UG/KG(PPB)

1 NONE FOUND

VOA

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V3 08/24/87 DATE RECEIVED: SOIL MATRIX: LOW LEVEL: 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: INSTRUMENT ID: 5101 STANDARD ID: **VOA397**

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	UG/KG(PPB)	LIMIT
74-87-3	CHLOROMETHANE	 .ND	30.
74-83-9	BROMOMETHANE	ND	30.
75-01-4	VINYL CHLORIDE	ND	30.
75-00-3	CHLOROETHANE	ND	30.
75-09-2	METHYLENE CHLORIDE	ND	50.
67-64-1	ACETONE	ND	50.
107-02-8	ACROLEIN	ND	50.
107-13-1	ACRYLONITRILE	ND	50.
75-15-0	CARBON DISULFIDE	ND	5.
75-35-4	1,1-DICHLOROETHENE	ND	5.
75-34-3	1,1-DICHLOROETHANE	ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE	ND	5.
109-99-9	TETRAHYDROFURAN	ND	5.
75-69-4	TRICHLOROFLUOROMETHANE	ND	5.
76-13-1	FREON-TF	ND	5.
106-93-4	ETHYLENE DIBROMIDE	ND	5.
123-91-1	1,4-DIOXANE	ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	ИD	5.
67-66-3	CHLOROFORM	ND	5.
107-06-2	1,2-DICHLOROETHANE	ИD	5.
78-93-3	2-BUTANONE	ND	50.
71-55-6	1,1,1-TRICHLOROETHANE	36.	5.
16-23-5	CARBON TETRACHLORIDE	ND	5.
108-05-4	VINYL ACETATE	ND	30.
75-27-4	BROMODICHLOROMETHANE	ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE	ND	5.
78-87-5	1,2-DICHLOROPROPANE	ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE	ND	5.
79-01-6	TRICHLOROETHENE	ND	5.
124-48-1	DIBROMOCHLOROMETHANE	ND	5.
79-00-5	1,1,2-TRICHLOROETHANE	ND	5.
71-43-2	BENZENE	ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE	ND	5.
110-75-8	2-CHLOROETHYLVINYL ETHER	ND	50.
75-25-2	BROMOFORM	ND	5.
119-78-6	2-HEXANONE	ND	30.
108-10-1	4-METHYL-2-PENTANONE	ND	30.
127-18-4	TETRACHLOROETHENE	ND	5.
108-88-3	TOLUENE	8.	5.

DETECTION

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 08/24/87 GCMS FILENAME: 6926V3
LEVEL: LOW MATRIX: SOIL
DATE PREPARED: 09/01/87 DATE ANALYZED: 09/01/87
STANDARD ID: VOA397 INSTRUMENT ID: 5101

STANDARD ID: VOA39
SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC: UG/KG(PPB)	DETECTION LIMIT
****	F=====================================		£
108-90-7	CHLOROBENZENE	ND	5.
100-41-4	ETHYLBENZENE	ND	5.
	STYRENE	ND	5.
100-42-5		ND	5.
95-47-6	TOTAL XYLENES	ND	5.
108-41-8	M-CHLOROTOLUENE	<u></u>	5.
95-50-1	1,2-DICHLOROBENZENE	ND	
541-73-1	1,3-DICHLOROBENZENE	ND	5.
106-46-7	1,4-DICHLOROBENZENE	ND	5.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-3-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME FRACTION CONCENTRATION UG/KG(PPB)

1 NONE FOUND VOA

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-5-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

GCMS FILENAME: 6926V4 DATE RECEIVED: 08/24/87 SOIL MATRIX: LOW LEVEL: 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: INSTRUMENT ID: 5101 **VOA397** STANDARD ID:

SAMPLE AMOUNT: 1.0G

			((DETECTION
CAS #	COMPOUND	CONC:	UG/KG(PPB)	LIMIT
	CHLOROMETHANE		ND	30.
74-87-3	BROMOMETHANE		ND	30.
74-83-9	VINYL CHLORIDE		ND	30.
75-01-4	CHLOROETHANE		ND	30.
75-00-3	METHYLENE CHLORIDE		ND	50.
75-09-2	ACETONE		ND	50.
67-64-1			ND	50.
107-02-8	ACROLEIN ACRYLONITRILE		ND	50.
107-13-1			ND	5.
75-15-0	CARBON DISULFIDE		ND	5.
75-35-4	1,1-DICHLOROETHENE		· ND	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		14.	5.
123-91-1	1,4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
67-66-3	CHLOROFORM		ND ND	5.
107-06-2	1,2-DICHLOROETHANE		ND ND	50.
78-93-3	2-BUTANONE			5.
71-55-6	1,1,1-TRICHLOROETHANE		13.	5.
16-23-5	CARBON TETRACHLORIDE		ND	30.
108-05-4	VINYL ACETATE		ND ND	5.
75-27-4	BROMODICHLOROMETHANE			5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5. 5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	5. 5.
79-01-6	TRICHLOROETHENE		ND	5.
124-48-1	DIBROMOCHLOROMETHANE		ND	
79-00-5	1,1,2-TRICHLOROETHANE		ND	5. 5.
71-43-2	BENZENE		ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	50.
75-25-2	BROMOFORM		ND	5.
119-78-6	2-HEXANONE		ND	30.
108-10-1	4-METHYL-2-PENTANONE		ND	30.
127-18-4	TETRACHLOROETHENE		_ ND	5.
108-88-3	TOLUENE		7.	5.

PERFORTON

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-7-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

6926V11 GCMS FILENAME: 08/24/87 DATE RECEIVED: SOIL MATRIX: MEDIUM LEVEL: 09/01/87 DATE ANALYZED: 09/01/87 DATE PREPARED: 5101 INSTRUMENT ID: **VOA397** STANDARD ID:

SAMPLE AMOUNT: 1.0G:1ML,200UL:1ML,5

CAS #	COMPOUND		UG/G(PPM)	DETECTION LIMIT
74-87-3	CHLOROMETHANE	*******	ND	30.
74-83-9	BROMOMETHANE		ND	30.
74-63- 9 75-01-4	VINYL CHLORIDE		ND	30.
75-01-4 75-00-3	CHLOROETHANE		ND	30.
75-00-3 75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		ND	50.
107-02-8	ACROLEIN		ND `	50.
107-13-1	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ND	5.
75-15-0 75-35-4	1,1-DICHLOROETHENE		ND	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		ИD	5.
	1,4-DIOXANE		ND	5.
123-91-1	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
96-12-8	CHLOROFORM		ND	5.
67-66-3	1,2-DICHLOROETHANE		ND	5.
107-06-2	2-BUTANONE		810.	50.
78-93-3	1,1,1-TRICHLOROETHANE		ND	5.
71-55-6	CARBON TETRACHLORIDE		ND	5.
16-23-5			ND	30.
108-05-4	VINYL ACETATE		ND	5.
75-27-4	BROMODICHLOROMETHANE		ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	5,
79-01-6	TRICHLOROETHENE		ND	5.
124-48-1	DIBROMOCHLOROMETHANE		ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	50.
110-75-8	2-CHLOROETHYLVINYL ETHER		ND	5.
75-25-2	BROMOFORM		ND	
119-78-6	2-HEXANONE		840.	30.
108-10-1	4-METHYL-2-PENTANONE		ND	
127-18-4	TETRACHLOROETHENE		ND	
108-88-3	TOLUENE		ND	٦.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-7-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 08/24/87 GCMS FILENAME: 6926V11 LEVEL: MEDIUM MATRIX: SOIL

DATE PREPARED: 09/01/87

STANDARD ID: VOA397

DATE ANALYZED: 09/01/87

INSTRUMENT ID: 5101

STANDARD ID: VOA397 INSTANDLE AMOUNT: 1.0G:1ML,200UL:1ML,5

CAS #	COMPOUND	CONC:	UG/G(PPM)	DETECTION LIMIT
822377722	******************		······································	5.
108-90-7	CHLOROBENZENE		ND	=
100-41-4	ETHYLBENZENE		ND	5.
	STYRENE		ND	5.
100-42-5			ND	5.
95-47-6	TOTAL XYLENES			
108-41-8	M-CHLOROTOLUENE		ND	5.
95-50-1	1,2-DICHLOROBENZENE		ND	5.
• • • •			ND	5.
541-73-1	1,3-DICHLOROBENZENE			5.
106-46-7	1.4-DICHLOROBENZENE		ND	5.

CLIENT: WOODWARD-CLYDE

SITE: DOUGLAS AIRCRAFT SAMPLE: 17TB-7-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/G(PPM)

1 NONE FOUND

VOA

Data Reporting Qualifiers

- Value If the result is a value greater than or equal to the Detection Limit (DL), the value is reported.
- ND Indicates that the compound was analyzed for but not detected. The minimum DL for the sample with the ND is reported based on necessary concentration or dilution actions.
- TR Indicates an estimated value. This flag is used when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified DL but greater than zero.

Woodward-Clyde Consultants



CHAIN OF CUSTODY RECORD

SHIPMENT NO.: 3 PAGE OF Z DATE 8 1247 87

PROJECT NAME: DOUGLAS AIR COAFT

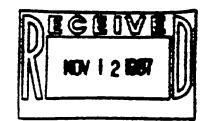
PROJECT NO .: 8741863 C - 5080

* Note - This does not constitute authorization to proceed with analysis

Sample Number	Locatio	, T	ype of	Sam	ple	Type of	Container	_			ervation	Analysis Required *	
Sample Number	Localit	Ma	terial	Me	thod			Ter			emical		
576-1-3	1513	ادی	L	MOY).	POSS	TJ85	K	5		NE	COUT	
578-2-3	1		1	CAL	-1F.						<u> </u>		MOE
576-3-4					1						8240	au	BNXX
578-4-3	-		1								(1)	714 -	815-6886
5TB-5-3			1	1							"		
578-6-3	 	_	+	1									
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578-7-3	 	-	1	 					T				
578-8-3	1-1		+	+-					1				
578-7-3				+-	 	 		\top	1				
778-1-3	DIE	-+	+-					+	1	ļ	8240		
778-2-3			+	+-	 			+	+		"		
778.3-3		$-\!\!\!\!+\!\!\!\!\!-$	+-	+	 		 	+	+-	1			
778-4-3	1		-	+		 	 	+	+		8240		
778-5-3				+		 	 	+-	+	-	0210	+	
1778 - 6-3	\downarrow			-	}		 	+-		┼	8240	-	
778-7-3	P				}	 	-	-		\vdash	0,49	+	
1778-8-3	$\perp \perp$			4		ļ	<u> </u>			┼	 -	+	
1718-7-3	1						 		╁	-			
19TW-1-3	MIL	ر			<u></u>	<u> </u>	<u> </u>		4	╀-			
11TW-Z-3	1		4		<u> </u>		V	, ,			<u> </u>	<u> </u>	
Total Number of	Sample	s Shippe	ed: 37		Sample	r's Signati		De					2
Relinquished Byy	$\overline{}$	0	1-	1	_	Recei	ved By:	خلدره		. X			Date - 9/24/
Signature Signature	au 9	rigi	and the	200	7500		nature		<u>u ,</u> Ł .	Dun	x B	<u> </u>	
Printed Name Company	WCC		067	//	7.84		npany	12	cH:	<u> </u>	≥ B • 6 9 2	<u> </u>	Time
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Signature							nature						- L <u>-/</u>
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Company Reason						_ "							<u> </u>
Relinquished By:						Rece	ived By:						Date
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Reason						Rece	ived By:						Date
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LA-OF-0183-421

November 10, 1987



WOODWARD-CLYDE 203 N. Golden Circle Drive Santa Ana, CA 92705

Attn: Allistair Callendar

JOB NO. 7592



LABORATORY REPORT

Samples Received: Twenty-five (25) soil & four (4) water samples

Date Received: 10-29-87

Released for Analysis: 11-4-87

Purchase Order No: Proj: 8741863D-1000/Douglas Aircraft

The samples were analyzed as follows:

Samples Analyzed

Analysis

Results

MW-3-2-3 & MW-3-3-3

Volatile Organics

by EPA 8240

Data Sheets

Page 1 of 1

Michael Shelton

Senior Chemist

D.J. Northington, Ph.D. Technical Director

9840 Alburtis Avenue • Santa Fe Springs, California 90670 • 213/948-2225

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3-2-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

7592V1 GCMS FILENAME: 10/29/87 DATE RECEIVED: SOIL MATRIX: LOW LEVEL: DATE ANALYZED: 11/10/87 11/10/87 DATE PREPARED: INSTRUMENT ID: 5100 VOA607 STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND		UG/KG(PPB)	LIMIT
74-87-3	CHLOROMETHANE	242322X	ND	30.
74-83-9	BROMOMETHANE		ИD	30.
75-01-4	VINYL CHLORIDE		ND	30.
75-01-4 75-00-3	CHLOROETHANE		ND	30.
75-00-3 75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		ND	50.
107-02-8	ACROLEIN		ND	50.
107-02-8	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ND	5.
75-35-4	1,1-DICHLOROETHENE		53.	5.
75-35-4 75-34-3	1,1-DICHLOROETHANE		98.	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		ND	5.
123-91-1	1,4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
67-66-3	CHLOROFORM		ND	5.
107-06-2	1,2-DICHLOROETHANE		ND	5.
78-93-3	2-BUTANONE		ND	50.
71-55-6	1,1,1-TRICHLOROETHANE		70.	5.
16-23-5	CARBON TETRACHLORIDE		ND	5.
108-05-4	VINYL ACETATE		ND	30.
75-27-4	BROMODICHLOROMETHANE		ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
79-34-5 78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6			ND	5.
79-01-6	TRICHLOROETHENE		ND	5.
124-48-1	CHLORODIBROMOMETHANE		ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	50.
75-25-2	BROMOFORM		ND	5.
119-78-6	2-HEXANONE		ND	3 0.
108-10-1	4-METHYL-2-PENTANONE		ND	30.
127-18-4	TETRACHLOROETHENE		ND	5.
108-88-3	TOLUENE		590.	. 5.
T00-00-3	TOTOTAL		-	

DETECTION

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3-2-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

7592V1 GCMS FILENAME: 10/29/87 DATE RECEIVED: SOIL MATRIX: LOW LEVEL: 11/10/87 DATE ANALYZED: 11/10/87 DATE PREPARED: 5100 INSTRUMENT ID: VOA607 STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC:	UG/KG(PPB)	DETECTION LIMIT
888888888	=		ND	5.
108-90-7	CHLOROBENZENE		- -	
100-41-4	ETHYLBENZENE		ND	'5 •
	STYRENE		ND	5.
100-42-5			ND	5.
95-47-6	TOTAL XYLENES		ND	5. [~]
108-41-8	M-CHLOROTOLUENE			
541-73-1	1,3-DICHLOROBENZENE		ND	5.
	1,4-DICHLOROBENZENE		ND	5.
106-46-7 95-50-1	1,2-DICHLOROBENZENE		ND	5.

CLIENT: WOODWARD-CLYDE

SITE: DOUGLAS AIRCRAFT SAMPLE: MW-3-2-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME

FRACTION CONCENTRATION

UG/KG(PPB)

1 NONE FOUND

VOA

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

7592V2 GCMS FILENAME: DATE RECEIVED: 10/29/87 SOIL LOW MATRIX: LEVEL: DATE ANALYZED: 11/10/87 DATE PREPARED: 11/10/87 5100 INSTRUMENT ID: **VOA607** STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC:	UG/KG(PPB)	DETECTION LIMIT
74-87-3	CHLOROMETHANE		ND	30.
74-83-9	BROMOMETHANE		ND	30.
75-01-4	VINYL CHLORIDE		ND	30.
75-00-3	CHLOROETHANE		ND	30.
75-09-2	METHYLENE CHLORIDE		ND	50.
67-64-1	ACETONE		ND	50.
107-02-8	ACROLEIN		ND	50.
107-13-1	ACRYLONITRILE		ND	50.
75-15-0	CARBON DISULFIDE		ИD	5.
75-35-4	1,1-DICHLOROETHENE		ND	5.
75-34-3	1,1-DICHLOROETHANE		ND	5.
156-60-5	TRANS-1,2-DICHLOROETHENE		ND	5.
109-99-9	TETRAHYDROFURAN		ND	5.
75-69-4	TRICHLOROFLUOROMETHANE		ND	5.
76-13-1	FREON-TF		ND	5.
106-93-4	ETHYLENE DIBROMIDE		ND	5.
123-91-1	1,4-DIOXANE		ND	5.
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE		ND	5.
67-66-3	CHLOROFORM		ИD	5.
107-06-2	1,2-DICHLOROETHANE		ND	5.
78-93-3	2-BUTANONE		ND	50.
71-55-6	1,1,1-TRICHLOROETHANE		ND	5.
16-23-5	CARBON TETRACHLORIDE		ND	5.
108-05-4	VINYL ACETATE		ND	30.
75-27-4	BROMODICHLOROMETHANE		ND	5.
79-34-5	1,1,2,2-TETRACHLOROETHANE		ND	5.
78-87-5	1,2-DICHLOROPROPANE		ND	5.
10061-02-6	TRANS-1,3-DICHLOROPROPENE		ND	5.
79-01-6	TRICHLOROETHENE		ND	5.
124-48-1	CHLORODIBROMOMETHANE		ND	5.
79-00-5	1,1,2-TRICHLOROETHANE		ND	5.
71-43-2	BENZENE		ND	5.
10061-01-5	CIS-1,3-DICHLOROPROPENE		ND	5.
110-75-8	2-CHLOROETHYLVINYLETHER		ND	50.
75-25-2	BROMOFORM		ND	5.
119-78-6	2-HEXANONE		ND	30.
108-10-1	4-METHYL-2-PENTANONE		310.	30.
127-18-4	TETRACHLOROETHENE	•	ND	5.
108-88-3	TOLUENE		8.	5.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: MW-3-3-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

DATE RECEIVED: 10/29/87 GCMS FILENAME: 7592V2 LEVEL: LOW MATRIX: SOIL DATE PREPARED: 11/10/87 DATE ANALYZED: 11/10/87 STANDARD ID: VOA607 INSTRUMENT ID: 5100 SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC:	UG/KG(PPB)	DETECTION LIMIT
108-90-7	CHLOROBENZENE		- 1920年 - 192	
100-41-4	ETHYLBENZENE		ND	· 5.
100-42-5			ИD	5.
	STYRENE		ND	5.
95-47-6	TOTAL XYLENES		ND	5.
108-41-8	M-CHLOROTOLUENE		ND	5.
541-73-1	1,3-DICHLOROBENZENE		ND	5.
106-46-7	1,4-DICHLOROBENZENE		ND	5.
95-50-1	1,2-DICHLOROBENZENE	•	ND	5.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-5-3

ANALYSIS TYPE: EPA METHOD 8240 (624)

ORGANICS ANALYSIS DATA RESULTS

6926V4 GCMS FILENAME: 08/24/87 DATE RECEIVED: SOIL MATRIX: LOW LEVEL: DATE ANALYZED: 09/01/87 09/01/87 DATE PREPARED: INSTRUMENT ID: 5101 **VOA397** STANDARD ID:

SAMPLE AMOUNT: 1.0G

CAS #	COMPOUND	CONC:	UG/KG(PPB)	DETECTION LIMIT

108-90-7	CHLOROBENZENE		ND	5.
100-41-4	ETHYLBENZENE		ND	5.
100-42-5	STYRENE		ND	5.
	TOTAL XYLENES		ND	5.
95-47-6			ND	5.
108-41-8	M-CHLOROTOLUENE			
95-50-1	1,2-DICHLOROBENZENE		ND	5.
541-73-1	1,3-DICHLOROBENZENE		ND	5.
106-46-7	1,4-DICHLOROBENZENE		ND	5.

CLIENT: WOODWARD-CLYDE SITE: DOUGLAS AIRCRAFT

SAMPLE: 17TB-5-3

TENTATIVELY IDENTIFIED COMPOUNDS

COMPOUND NAME		CONCENTRATION UG/KG(PPB)	
1 1,3-DIOXOLANE	VOA	600.	